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NOVEMBER 1998 ISSUE 109

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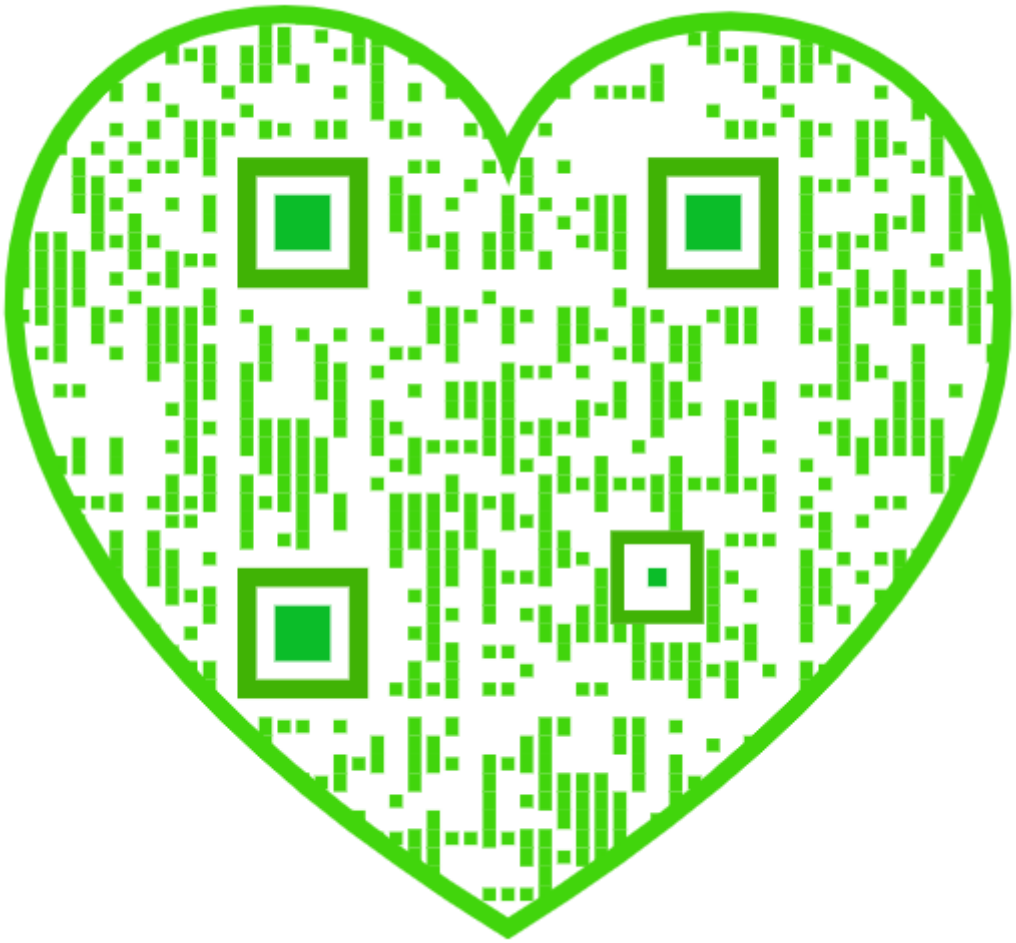

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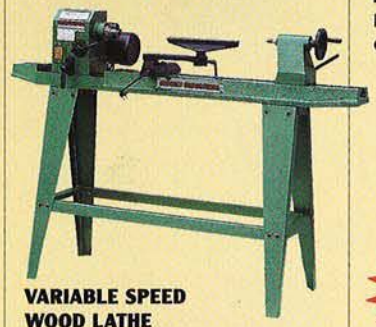

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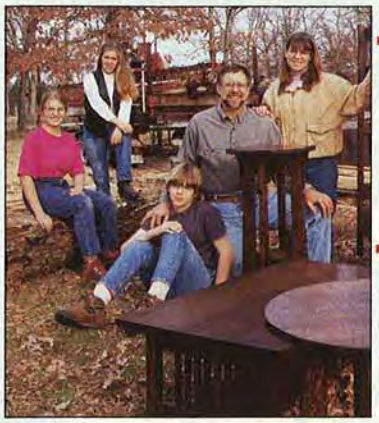
ISSUE NO. 109 NOVEMBER 1998
This issue's cover wood grain: Cottonwood



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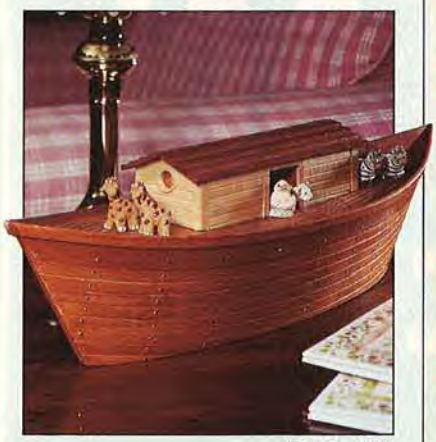

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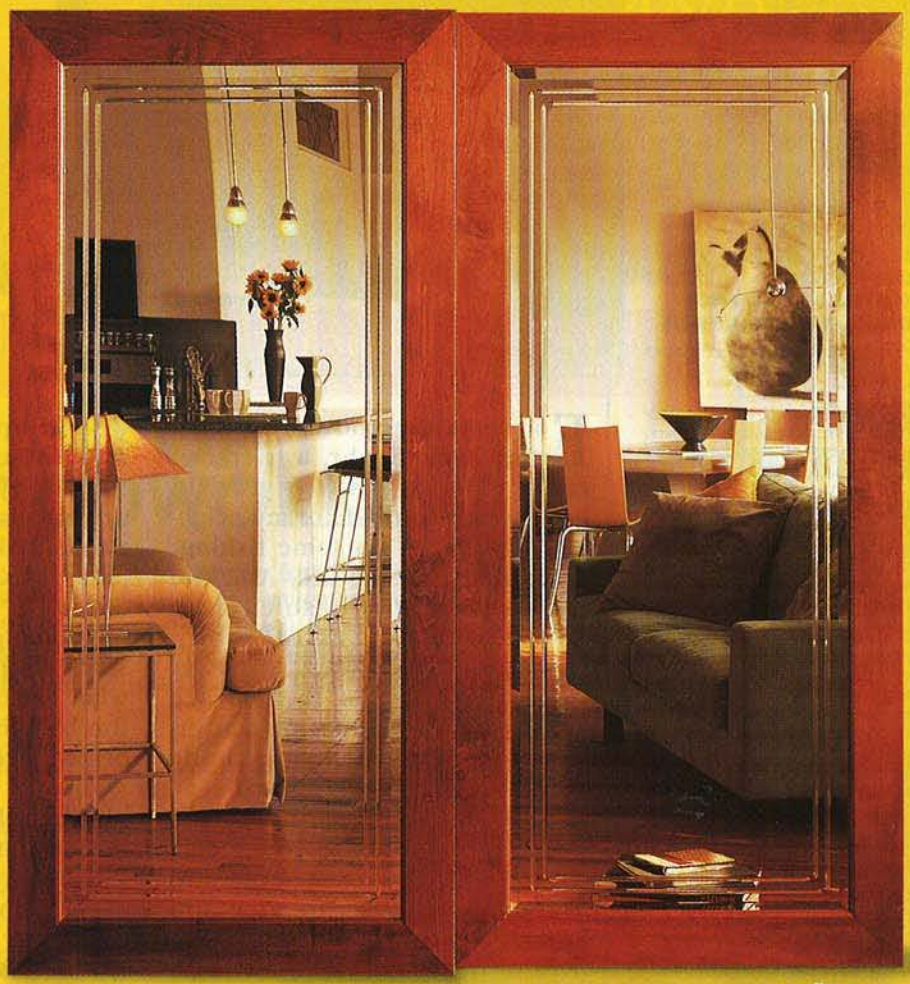

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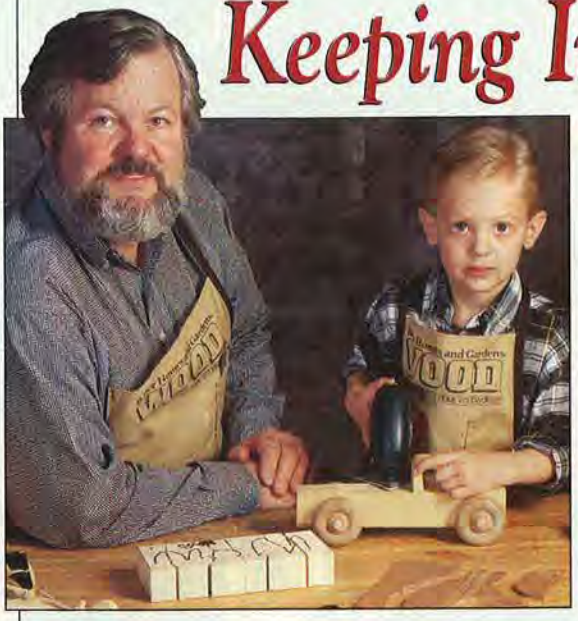
THE EDITOR'S ANGLE

Keeping Important Traditions Alive!



Jim Downing and his good woodworking buddy Carson like to share quality time in Grandpa's home workshop.

For some time now, I've been after Kenn Spahr, a friend of mine, to bring his four-year-old grandson over to one of my neighbor's ponds to do some fishing. The other day, he did. And the results were predictable. Little Robbie, with some excellent help from Grandpa, managed to reel in four small bluegills. In total, we caught eight keepers that afternoon, although later Robbie clearly recalled catching nine himself.

This adventure reminded me once again how much young children look to their parents and grandparents for guidance and inspiration. Chances are that after a few more successful outings, Robbie will be a fisherman for life, and, in turn, Grandpa will have a fishing buddy who thinks he's pretty darned special. What a deal!

The fact is that many kids will become interested in most anything you expose them to. Jim Downing, *WOOD®* magazine's design editor, is experiencing this phenomenon with his five-year-old grandson Carson right now.

Jim remembers with fondness the times he spent with his own dad. "I always looked forward to helping him with whatever he was working on. He made me feel like he actually needed my help." So when Carson came into Jim's workshop one day wanting to make something, Jim said, "It was a special day for me. It was time to begin passing on what I know about making projects, and the pride associated with being able to do it well."

According to Jim, he and Carson start their projects by brainstorming what Carson wants to build. Then, Jim has him draw out the design before beginning construction.

Carson's first projects were simply small boards nailed together, but to him they looked like airplanes. And as you can see, he's come a long way since then.

Like any self-respecting woodworker, this young guy can't wait to show off his completed projects. And Jim says that seeing him smile is well worth the time invested.

His favorite tool? It's a small cordless drill his dad bought him. And, of course, Carson has his very own downsized *WOOD* magazine shop apron. Folks, he's official.

My thanks go out to both of these grandpas for taking the time to have a positive influence on the younger generation. With role models like these, we surely will have plenty of woodworkers and fishermen now and in the future.

Larry Clayton

Photograph: Hetherington Photography

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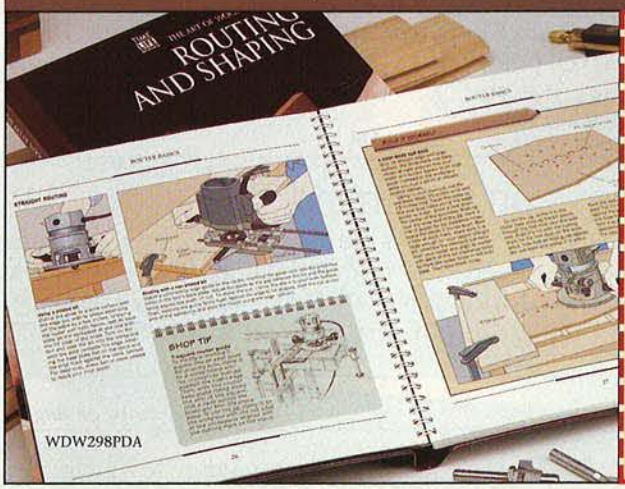

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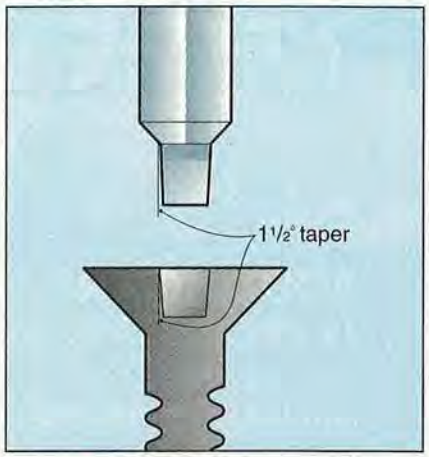
TALKING BACK

Square-drive and Robertson screws: The difference is in name only

It was quite a surprise to read the recent letter (issue #107) from Tom Rawley of Cambridge, Ontario, concerning the "differences" between square-drive and Robertson screws.

According to Bill Weston, vice president and general manager of Robertson, Inc., the Canadian firm that manufactures the "Original Robertson" screw and the owner of P.L. Robertson's original Canadian and U.S. patents, it's unlikely that there ever was a restriction that Robertson screws be manufactured exclusively in Canada. In fact, Robertson, Inc. or its sister company has manufactured Robertson screws outside Canada for more than 50 years and in the United States for almost 20 years. Since 1969, "Robertson" has been the trademark for the square recess drive screw manufactured by Robertson, Inc. Trademarks offer protection only for the name given to a product, not for the design of the product itself, however. Since the original patents date from 1908 and have long expired, there is no legal restriction on the manufacture of square-recess-drive-screws.

As the first successful recess style drive system, the Robertson screw relied on a slight "draft" or taper to the drive recess to allow for the reliable extraction of the punch that forms the recess during manufacture. It is possible that someone has manufactured a square recess screw without tapering the recess, but I am not aware of it. The Industrial Fasteners Institute is the governing body for standardization of most industrial fasteners, and in the Sixth Edition of its seven-pound reference manual, they list the specifications for "square-recessed-



head-screws" (designated as a Type III recess), including the requirement for a 1½-degree taper on all four sides of the recess. The IFI is an independent organization composed of member companies dedicated to the advancement of fastener technology, and therefore refers to a square-recess-head-screw instead of a Robertson-drive-screw to avoid appearing to endorse a trademarked product.

Finally, within the recreational and custom cabinet markets, much of the blame for the confusion over terminology must be laid on my company, McFeely's-Square-Drive-Screws. Back when we began advertising them heavily in magazines and through our catalog, the term "Robertson screw" was meaningless to most woodworkers in the United States. In fact, the concept of a non-Phillips-drive-screw was rather foreign. I made the decision to refer to the Robertson-drive-screws we sold by the more descriptive name "square-drive screw."

James C. Ray, President
McFeely's Square Drive Screws, Lynchburg, Va.

Let us know what's on your mind

We welcome your comments, criticisms, suggestions, and yes, even compliments. We'll do our level best to publish letters of the greatest benefit to all our readers. Write to us at: Talking Back, *WOOD* Magazine, 1716 Locust St., GA310, Des Moines, IA 50309-3023.

Continued on page 8

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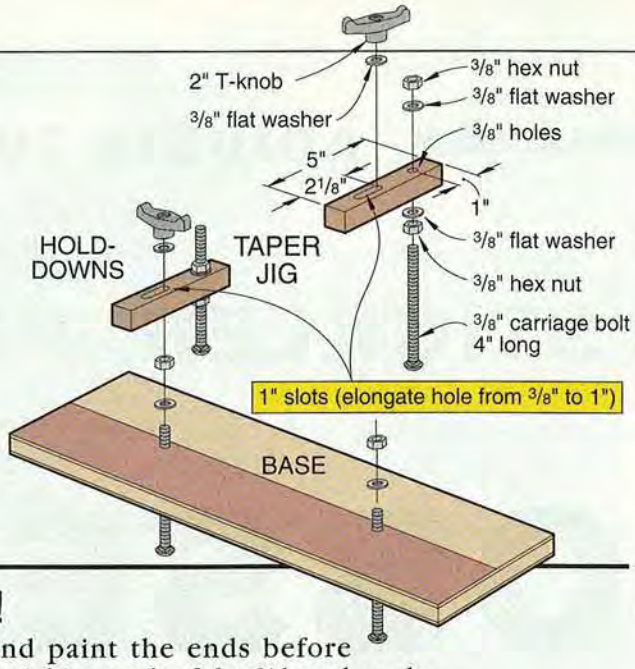
Continued from page 6

How to make our super-simple taper jig even better

I built the super-simple taper jig shown on *page 84* of issue #102. It's 100 percent better than the aluminum jig I'd been using—and I've discovered a way to make it better.

The hold-downs require continual adjustment as stock thickness changes. So, after drilling the ⅜" holes in the hold-downs, I elongated the two holes (for the T-knobs) to 1" each running the length of the blocks. This modification makes the jig work much like handscrew clamps. Now I rarely have to adjust the jig for workpiece thickness as I cut different tapers.

—Gilbert Vonk, Phoenix



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I enjoyed your article "Why You Pay What You Do for Wood" by Peter Stephano in issue #104. Fortunately, I've found a way to get around those high retail prices.

Here in northwest Arkansas some old lumber mills still saw railroad ties. They slab white-oak logs down to the heartwood for the ties. The rest of the 1"-thick boards are sold at 30-90 cents per board foot, depending on their grade.

I try to get the boards with the fewest knots, attached bark, and sap stains. Once home, I square and paint the ends before weighing each of the 8'-long boards.

An 8"-wide board tips the scales at about 30 lbs. before I sticker and stack it. Five months later that same board weighs just 22 pounds. Air-drying releases almost an entire gallon of water in that time!

I let the lumber air-dry for at least a year before planing it down to 1⅝16". Then, I restack the oak boards inside until I'm ready to use them.

—John Frey, Eureka Springs, Ark.

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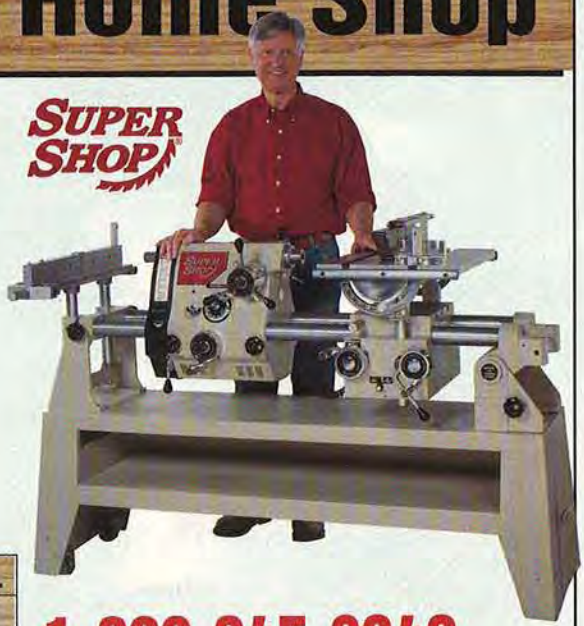

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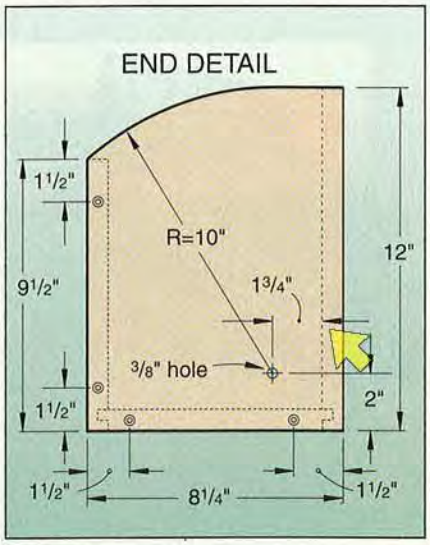
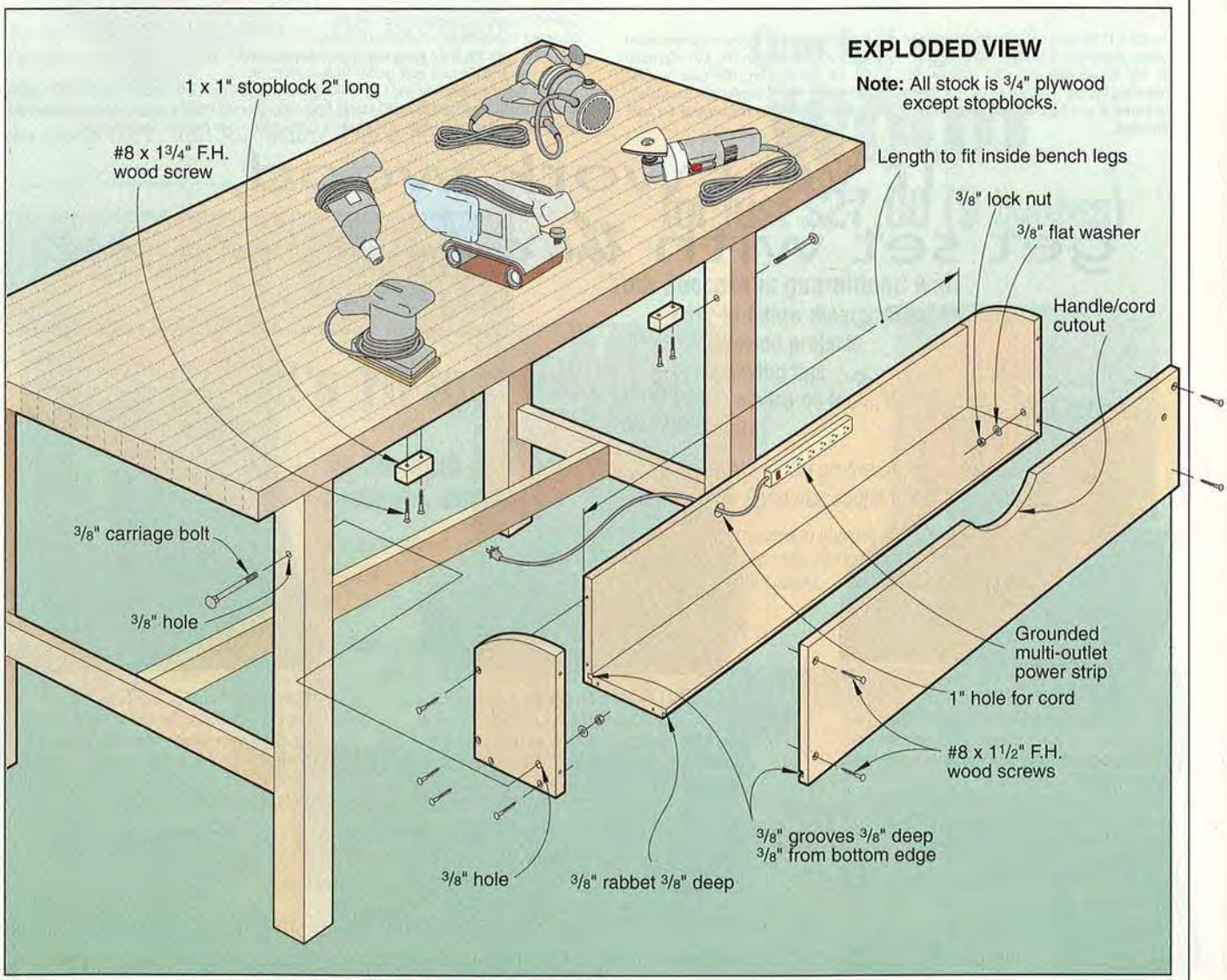
Out-of-sight WORKBENCH TOOL CRIB

To store his tools close at hand, reader Donovan Nagel designed and built this hanging tool crib that neatly secures in place beneath the benchtop. He stores power tools in it, but you can use it to best suit your needs.

Simply build the crib as shown to fit between the legs of your workbench. Fasten it in place with two ⅜" carriage bolts. To put your crib into action, simply pull on the handle cutout and swing it out. A pair of stops screwed to the bottom of your workbench prevent the crib from falling too far forward.

As an added feature, cut a hole in the back piece and install a multiple outlet in the tool crib.




EXPLODED VIEW
Note: All stock is ¾" plywood except stopblocks.
1 x 1" stopblock 2" long
#8 x 1¾" F.H. wood screw
Length to fit inside bench legs
⅜" lock nut
⅜" flat washer
Handle/cord cutout
⅜" carriage bolt
⅜" hole
Grounded multi-outlet power strip
1" hole for cord
#8 x 1½" F.H. wood screws
⅜" grooves ⅜" deep ⅜" from bottom edge
⅜" hole
⅜" rabbet ⅜" deep

Project Design: Donovan Nagel, Madison, Wisconsin Illustrations: Kim Downing

EXTRA VALUE

The Grand Edition 14" Band Saw is one grand value. Rides around the shop on a mobile base and sports an 18" rip fence and Cool Blocks.™ More than $225 in extras. Then top it off with a **$50 rebate.**

Model 28-270

EXTRA VALUE

The Grand Edition 10" Contractor's Saw.* Loaded with over $200 in extras. A 30" Unifence Saw Guide, cast iron extension wing, white laminated table board and white adjustable support legs, plus a 50-tooth ATB&R carbide-tipped blade. Then add your **$50 rebate.**

Model 36-455

Newly designed, 3-piece stand cuts 70% of your assembly time. Flared legs improve stability. New see-through blade guard locks in the "up" position to facilitate blade changes.

White Hot.

EXTRA VALUE

Grand Edition Unisaw extras add up to over $300. Then add a **$100 rebate** on top of that.

Unisaw* stands alone for quality and precision. Every single arbor is flange-faced after assembly to reduce run-out. An extra step that other manufacturers don't bother with.

We've added an extra cast iron extension wing to start with. Then a 52" Unifence* Saw Guide, white laminated table and shelf board, white adjustable steel support legs and a 50-tooth ATB&R carbide-tipped blade.

Each Grand Edition Unisaw* carries the personalized name plate of its owner. Namely you.

Model 36-920

The Grand Edition series from Delta. Each a Delta classic. Each done in white. And each made in the USA and loaded with extra goodies. These babies are hot. And they'll be built in limited quantities, for a limited time only. (Extra values and rebates in effect, July 1, 1998–December 31, 1998.) For the name of your nearest participating dealer call Delta International Machinery Corp., 800-438-2486. In Canada, call 519-836-2840. Rebates are available in Canada (in Canadian funds) on these models only.

Proud sponsor of *The New Yankee Workshop* with Norm Abram and *The American Woodshop* with Scott Phillips.

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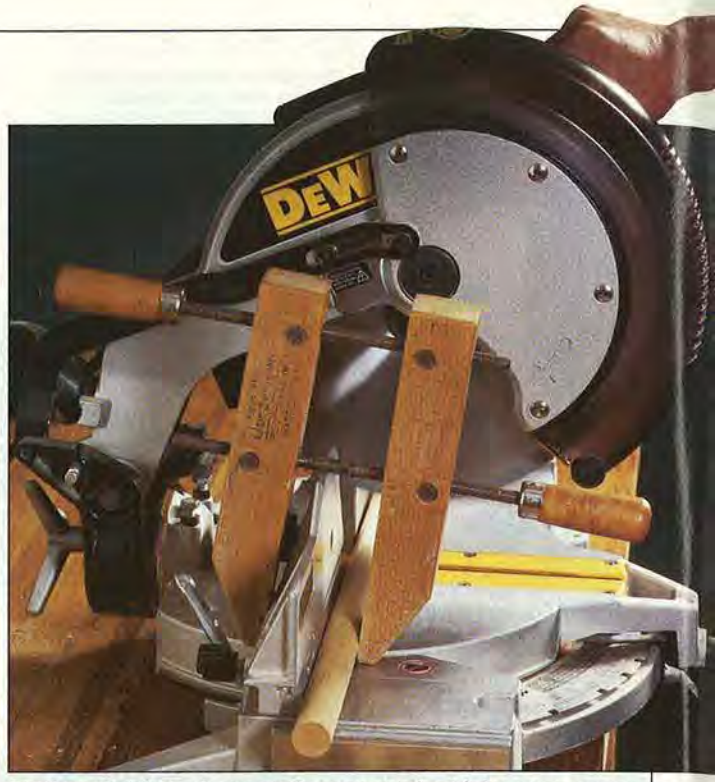
A Pentair Company

www.deltawoodworking.com

Clean Cutting With A Mitersaw

If you call it a chop saw, you're not using it right



Cutting round stock on a mitersaw can be tricky, even scary, unless you clamp it tightly so that it won't roll.

Power mitersaws rank second only to tablesaws in woodshop popularity, and behind only circular saws at construction sites. So if you're among the many who regularly use a mitersaw, you'll find these tips will make your sawing safer and easier.

Always cut, don't chop

Hurried house framers are particularly guilty of this: physically pushing the blade down into the wood as fast as they can. Of course, a good mitersaw with a sharp blade will cut faster than you can push it down anyway, but don't! All you end up doing is making a lousy cut. And how can you be sure your other hand will always be out of harm's way? Just take your time and let the mitersaw do the work.

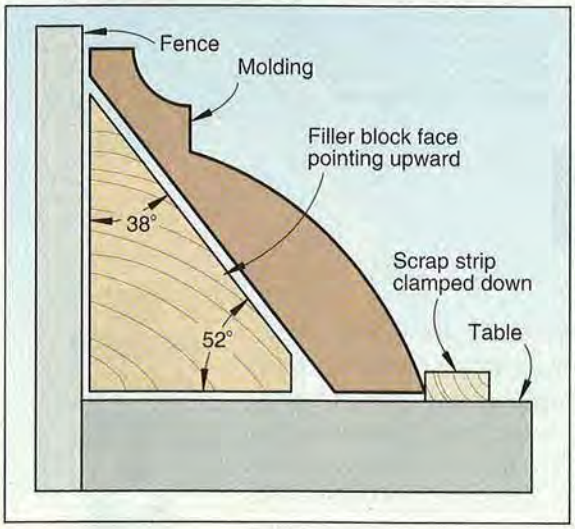
Make good contact

Starting your cut when the work isn't flush against the fence and solidly on the table is the surest way I know of to destroy a good piece of wood—and a mitersaw. It can result in broken fences, broken blades, broken or cut upper and lower guards, and if you're lucky, only a general bad attitude for the rest of the day. Before you make a cut on your mitersaw, *always* make sure you have the board completely on the table and flush against the fence.

Support compound cuts

Cutting accurate miter angles on crown moldings with a standard (not compound) mitersaw can be one of the hardest trim jobs imaginable. That's because you mount most crown molding at an angle of 38° to the wall. Therefore, you need to hold the molding at this angle when you make the cut—not easy to do. And because there's not solid contact with both the fence and the table, a slip could put you in danger as well as damage the workpiece.

Here's a good way to make those cuts. Simply make a filler block by ripping a 2×4 to a 38° bevel on your tablesaw. Then, attach the filler block to your mitersaw fence with the 38° angle up, as shown in the drawing *left*. When you place the crown molding upside down against the filler block, the cut will come out perfectly. For even more control, clamp a scrap-wood stop at the base of the molding to prevent any tipping during the cut.



Cut irregular shapes with control

Unfortunately, I've not seen a universal fixture for cutting irregularly shaped wood, such as a dowel. But I do know that the trick to doing it safely is to clamp the work firmly against the fence and on the table. As shown *above*, a handscrew will work, even for dowels.

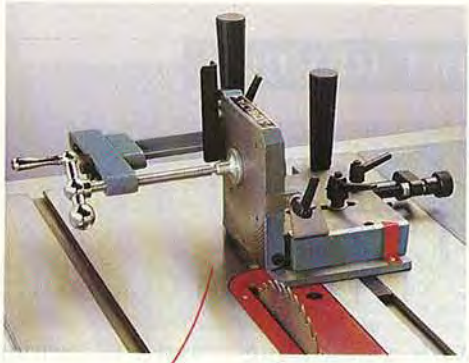
Mike Gilliland is a lifelong woodworker and an engineer with 25 years' experience designing and working with woodworking power tools to make them safer. A Missouri resident, he owns and runs a safety consulting firm there.

Send your safety-related questions with an SASE to: The Safety Man, WOOD® Magazine, 1716 Locust St., GA310, Des Moines, IA 50309-3023. Not all questions can be published, but all will receive a reply.

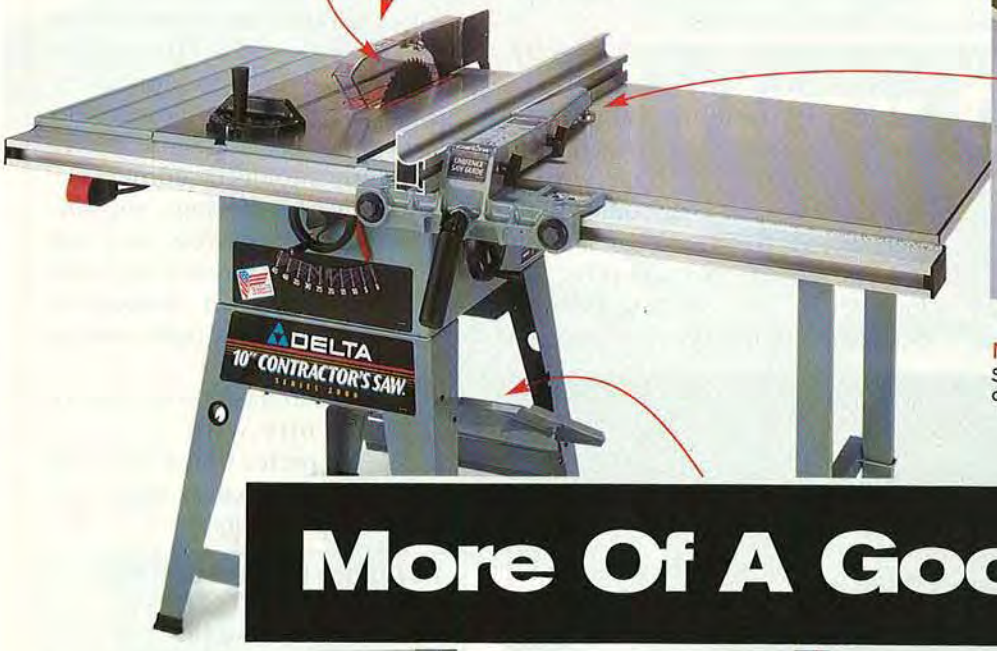
Tool photograph: Hetherington Photography Drawing: Roxanne LeMoine

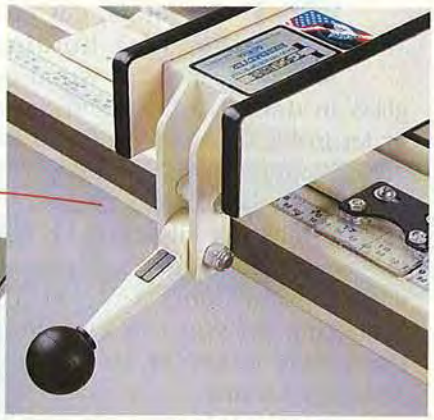
MORE PRECISION
A full line of saw blades, dado sets and cutter heads deliver the perfect cuts.

Ask for Genuine Delta Accessories when you visit your Delta dealer. Whether you're buying a new Delta machine or upgrading an old one, (even another manufacturer's machine) the good stuff is the stuff in the Delta package.



MORE VERSATILITY
Table top accessories such as a Delta tennoning jig or extra miter gages or hold downs can make your saw work harder.





MORE OPTIONS
Specify a Unifence® or Biesemeyer Fence, depending on your needs.

More Of A Good Thing.

MORE SAFETY
Various table extensions or a Deluxe Uniguard® Blade Guard let you handle large jobs.

LESS DUST
Breathe easy. Delta has a full line of dust collection accessories.

MORE MOBILITY
Shuttle any machine to wherever you need it with a hefty mobile base.

Your Delta dealer can accessorize any machine—from band saws to drill presses, to shapers, to table saws—with the stuff that'll make that machine more valuable in your shop. For the name of the Delta dealer nearest you, call Delta International Machinery Corp., 800-438-2486. In Canada, 519-836-2840.

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RABBETING BIT BEARING SETS

They add a new dimension to this bit

With a rabbeting bit like this one, you can make rabbet joints, cut rabbets for holding panels of wood or glass in doors and other frames, or let in back panels on furniture and cabinet carcases. Unlike the rabbets that you cut with a tablesaw or jointer, a rabbeting bit will follow curved edges such as an arch-topped door. And, with a rabbeting bit you can cut along the inside edges of an already-assembled frame.

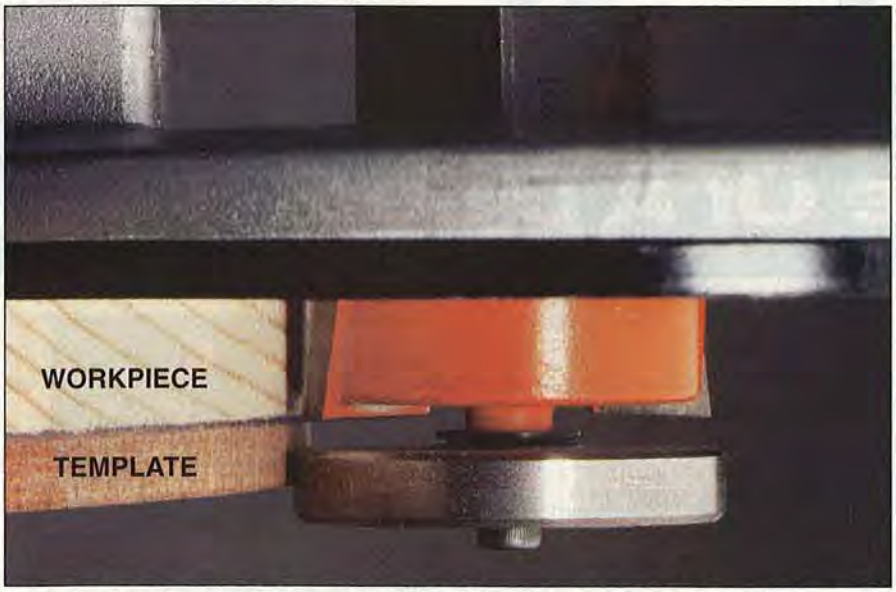
A typical rabbeting bit comes with either a 1¼"-diameter cutter and a ½" bearing for cutting a ⅜"-deep rabbet, or a 1⅜"-diameter cutter and ⅜" bearing for cutting ½"-deep rabbets. With either bit, you can greatly expand its versatility by purchasing a matching set of high-speed bearings like the ones shown *bottom*.

These bearing sets vary slightly by brand, but most consist of six bearings in these outside diameters: ½", ⅝", ¾", ⅞", 1⅛", and 1⅜". Most of these sets mate with a 1⅜" rabbeting bit that comes with a ⅜" bearing. With such a set you can cut rabbets in six depths: ½", 7⁄16", ⅜", 5⁄16", ¼", ⅛" (the smallest bearing gives the deepest cut). To cut rabbets at depths between these, remove the bearing completely and use the bit with a router table and fence.

Outfitted with the largest bearing (1⅜"), you can flush-trim workpieces less than ½" thick using a template as shown *below left*. You also can flush-trim veneers and plastic laminates, although the large-diameter bit and bearing will not allow you to trim tightly into inside corners.

To change the bearings, you simply loosen a tiny screw atop the bit with an allen wrench included with the bearing set. Remember to place the bearing right side up when reassembling.

You can purchase these sets for rabbeting bits with ¼" or ½" shanks. We prefer to use bits with the sturdier ½" shanks when cutting ½"-deep rabbets.



Outfit a rabbeting bit with a bearing of the same outside diameter and you have a flush-trimming bit.

For more information call:

CMT
888/268-2487

Freud
800/472-7307

Jesada Tools
800/531-5559

MLCS
800/533-9298**Woodline**

Arizona
800/472-6950

Written by Bill Krier with Chuck Hedlund
Photographs: Marty Baldwin

RABBET DEPTH REFERENCE CHART (with a 1⅜" diameter rabbeting bit)

One thing's for sure. You don't mess with success. The massive cast iron table and trunnion and power and precision are right where they've been since the day we built the first one of these critters. And we're still building them right here in the good ole US of A.

Smooth. Sweet. New UniRip™ T-Square style fence with single locking handle and extruded aluminum front rail, extends your capacity to 30" right of blade. Built-in T-slots accommodate jigs and other accessories.

Newly designed see-thru blade guard with splitter and anti-kickback attachment locks in the "UP" position for blade changing. Releases automatically when insert is replaced.

New Original.

Solid footing. Redesigned stand with splayed legs, integral dust chute and built-in storage for rip fence, miter gage and wrenches. Three-piece assembly can save 70% of your assembly time. And all of the aggravation.

Your Series 2000 Contractor's Saw® is also available with a Unifence,® Precision Saw Guide, or Biesemeyer Fence.

Model 36-444

EXTRA EXTRAS!
A tennoning jig or dado set or mobile base can make any saw perform better. Be sure to check out all the accessory possibilities when you purchase your new Delta machine.

Believe it. We've just improved on one of the industry's "standards." We've taken the original Contractor's Saw® that we designed some 46 years ago and moved it into the future. *Introducing the new Delta Series 2000 Contractor's Saw.*® New fence. New stand. *Old Delta Quality.* For the name of your nearest Delta dealer, call Delta International Machinery Corp., 800-438-2486. In Canada, 519-836-2840.

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MUSIC-BOX MANGER

This scrollsawn nativity scene sounds as good as it looks

Capture the spirit of the season with this lovely music box. As the melody plays, scrollsawn figures revolve on a turntable beneath the star of Bethlehem.

Print this article

First, build a housing for the musical movement

1 Photocopy the full-size patterns in the *WOOD PATTERNS®* insert in the middle of the magazine. Make two copies of the top and bottom pattern.

2 Attach the canopy pattern (A) to a ⅜×8½×8½" piece of cherry with spray adhesive or rubber cement. Adhere the top and bottom patterns (B, C) to two ⅜×5×8¾" pieces of walnut.

3 Scrollsaw the canopy. First, drill blade start holes, and cut out inside the large central star. Continue with the cutouts surrounding the star, then saw around the canopy outline. Rout ⅛" round-overs along the outside edge on both sides, shown on the Exploded View drawing.

4 Form the mortises in the top (B) where shown. To do this, first lay the cut-out canopy on the patterned top to verify the mortise locations and dimensions. Then, drill a ⅜" hole centered in each square. Complete the mortises by chiseling out the corners.

Drill holes in the top (B) and bottom (C) where shown. Countersink the screw holes on the bottom side of part C.

5 Cut out the top and bottom. Rout a ⅛" round-over around the top and bottom edge of each piece.

6 Cut two ⅜×2⅜×6" walnut box sides (D) and two ⅜×2⅜×3⅜" ends (E). Drill the keywind hole in one side (D) where shown.

Miter-cut both ends of all four pieces. Then, saw spline slots in the miters. To saw them, attach an auxiliary fence to your miter gauge, and set up your saw as shown in the Cutting the Spline Slots drawing. Set the blade depth and place the stopblock to put the ⅛"-deep slot approximately ⅛" from the short side of the miter.

7 Cut four ⅛×¼×2⅜" hardboard splines. Glue the box sides and ends together, reinforcing the joints with the splines, as shown.

8 Cut the ¾×1⅞×2⅛" spacer (F) to size. Drill a 5/16" hole through it where shown, then scrollsaw from the bottom of the hole to form a slot as shown. Referring to the Exploded

Continued on page 18

ACCURACY AND CAPACITY ANY WAY YOU CUT IT.

DW705
Heavy-Duty 12"
Compound Miter Saw

DW730
Heavy-Duty
Miter Saw Stand

DW708
Heavy-Duty 12" Double-Bevel Sliding Compound Miter Saw

Bevels 45° to the left and right, with the ability to bevel 48°, allowing users to flip the saw, not the work

Crosscut capacity of 12" at 90° to make cuts other saws can't

Extra-high fence accommodates molding up to 5-1/2" standing vertically

Miters 50° to the left and 60° to the right

Stainless steel miter scale with 11 positive stops and an unprecedented cam-action, miter locking system for making precise cuts

For years, the family of **DEWALT HEAVY-DUTY 12" COMPOUND MITER SAWS** has delivered levels of accuracy and capacity that have become the industry standard. Our miter saws are designed to make it easier than ever to get the finest cuts possible.The saws provide the capacity to cut 5-1/2" molding standing vertically, or a 4" X 4" at a 45° miter. The DW708 has the capacity to cut a 2" X 12" at 90° while the DW705 can cut a 2" X 8" at 90°. The extra-high fence provides superior material support and slides out of the way to make bevel cuts. An easy-to-read, stainless-steel miter scale provides up to 11 positive stops for ease and accuracy. What's more, our miter saws work perfectly with the Miter Saw Stand. Weighing only 35 pounds, it has a seven foot beam and supports loads of up to 300 pounds.

For more information, call 1-800-4 DEWALT or visit our web site at www.dewalt.com.

DEWALT
High Performance Industrial Tools

MUSIC-BOX MANGER

Continued from page 16

View drawing, glue two ⅜×1¾×2⅛" side pieces (G) to the spacer. Glue the assembly into the box, aligning the top of the slot with the hole through the side (D).

9 Glue the box to the underside of the top (B). The keywind hole should be near the bottom.

10 Center the bottom on the box. Drill pilot holes into the box, using the screw holes through the bottom (C) as guides. Temporarily screw on the bottom.

11 Glue the canopy into the mortises in the top. Ensure that the canopy stands perpendicular to the top.

Add the nativity figures

1 To make the turntable (H), draw a 4"-diameter circle on a piece of ¼"-thick cherry. Scrollsaw slightly outside the line, then sand to it. Rout a ⅛" round-over along the top edge.

2 Adhere the tree patterns (I, J) to ⅛"-thick cherry. Scrollsaw the parts, and glue them together as shown.

3 Stick the remaining patterns (K, L, M, N, O, and P) to ⅛"-thick maple. (They'll all fit on a 5×7½" piece.) Scrollsaw the figures.

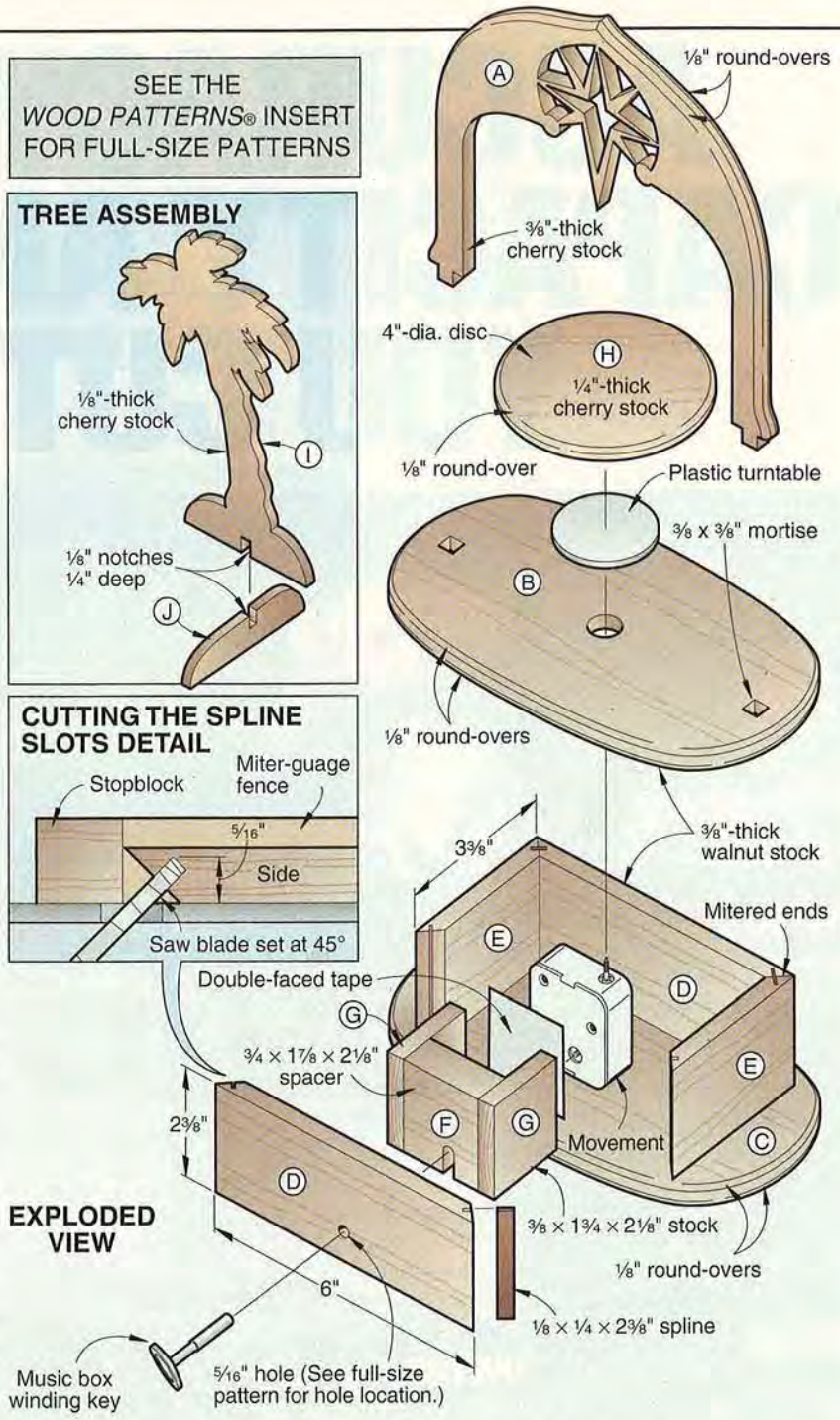
4 Snip the head from a 19-gauge wire nail, then chuck the nail in your portable drill. With it, drill ¼"-deep holes in the bottom of each figure. Cut several nails into 7/16" lengths, and press one into each hole. Press figures against the top and turntable to mark positions, then drill ¼"-deep holes at the marks with the nail and drill.

5 Apply a clear finish to the box, turntable, and figures. (We sprayed on semigloss lacquer.)

6 Remove the bottom of the box, and insert the musical movement, as shown *right*. Double-faced tape on the spacer block will hold the movement in place. Reattach the bottom.

7 Glue the wooden disc onto the plastic music-movement turntable. (We glued it with five-minute epoxy.) Then, with a dab of five-minute epoxy on each nail, place the figures in position. Install the turntable on the movement shaft, and screw the key onto the winding shaft.

SEE THE *WOOD PATTERNS*® INSERT FOR FULL-SIZE PATTERNS



Slide the key shaft up the slot in the spacer block to install the movement.

Buying Guide

Music-box movement. 18-note movement, choose "Silent Night" (item A262) or "Away in a Manger" (item A276). Order movement desired, plus parts kit, item A269, for $9.35 ppd. in U.S. Call for other tune choices and quantity discounts. The Berry Basket, P.O. Box 925, Centralia, WA 98531. Call 800/206-9009.

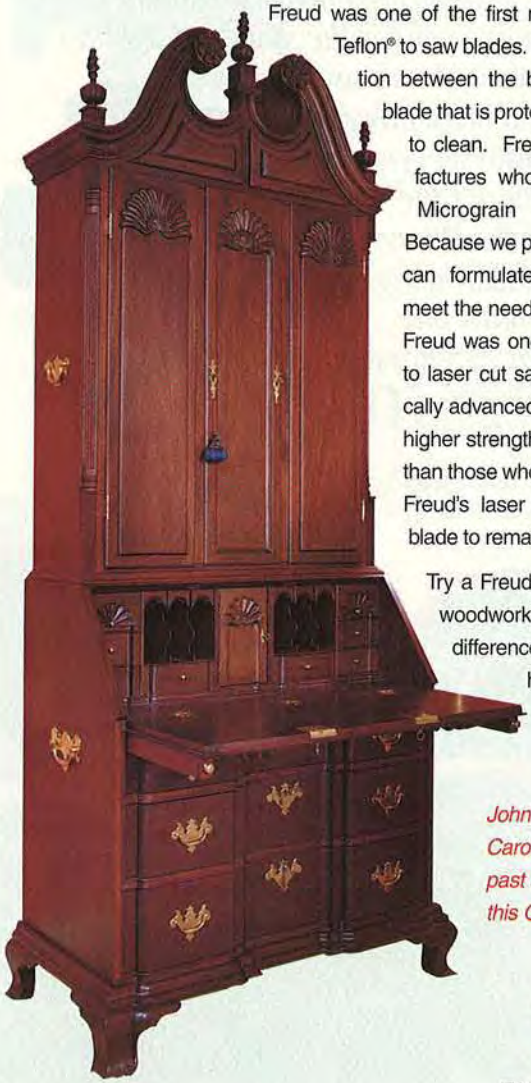
Project Design: The Berry Basket, Rick Longabaugh
Illustrations: Jamie Downing; Lorna Johnson
Photographs: Marty Baldwin; John Hetherington

imagine

the possibilities

Your vision as a woodworker is unique. At Freud Inc., we understand your vision as well as your needs and can provide you the quality and dependability you have come to expect.

Freud offers a full line of saw blades that are packed with extra features that ordinary saw blades just don't have.

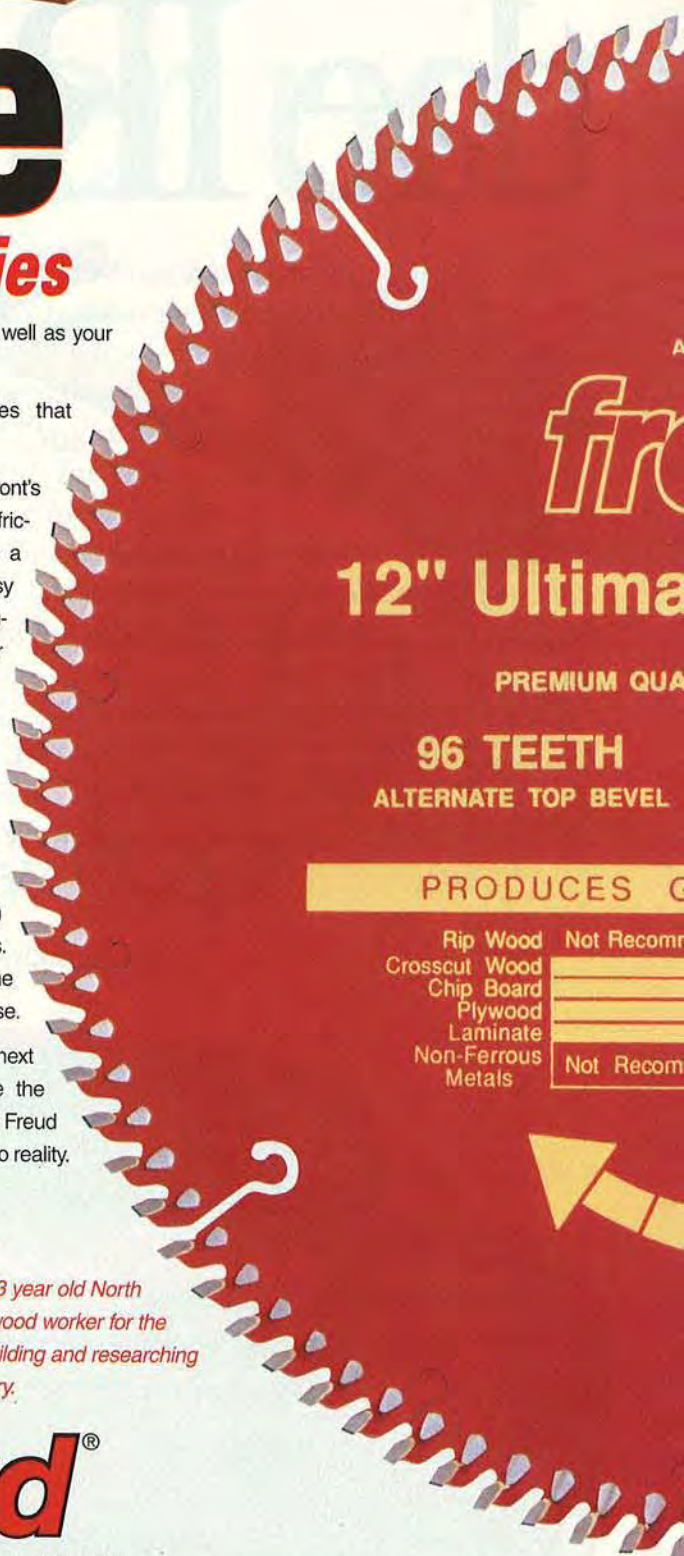


Freud was one of the first manufactures to apply DuPont's Teflon® to saw blades. This reduces the amount of friction between the blade and wood and yields a blade that is protected from corrosion and easy to clean. Freud is one of the only manufactures who produce their own Super Micrograin Carbide with Titanium. Because we produce our own carbide, we can formulate our carbide mixtures to meet the need of any cutting requirement. Freud was one of the first manufacturers to laser cut saw blades. This technologically advanced procedure allows us to use higher strength blade bodies (40 to 45 Rc) than those who machine stamp saw blades. Freud's laser cutting process allows the blade to remain true, even after years of use.

Try a Freud blade for yourself on your next woodworking project and experience the difference a Freud blade makes. Let Freud help turn your imagination into reality.

Imagine the possibilities –

John McAlister Jr. did. John, a 73 year old North Carolina native, and self taught wood worker for the past 31 years, spent one year building and researching this Goddard-Townsend secretary.



freud®

Precisely What You Need.

Photo: Pat Shanklin

"Information courtesy of DuPont Teflon® Industrial Coatings"

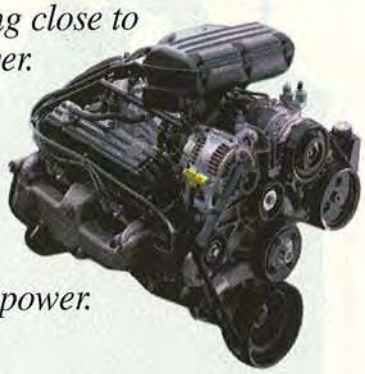
For any comments or questions about our products we can be reached at
1-800-472-7307 High Point, NC
1-800-263-7016 Mississauge, Ontario
or at freudinc@aol.com

If horsepower the IRS would

If horsepower were taxable, our 8 liter Magnum® V-10 alone would be an auditor's dream. At 310 horsepower, we'd have to declare it the most powerful gasoline pickup engine available. A fitting title, indeed, for what was the very first 10-cylinder pickup engine the world had ever seen.

Dodge Ram's 5.9 liter Magnum V-8 is not easily overlooked, either. Put it down as a very substantial contribution of 245 horsepower. And while we're at it, we mustn't forget to account for the other Magnum V-8, the 5.2 liter. That adds another 230 horsepower to the Dodge Ram Magnum engine lineup.

File away another 175 horsepower for the standard 3.9 liter V-6, and we're totaling close to a thousand horsepower. Impressive.



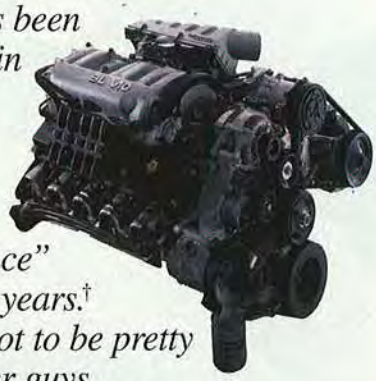
Then there's the matter of the Ram Cummins Turbo Diesel. That's an additional 235 horsepower.

were taxable, be all over us.

For you torque-crunchers out there, the 24-valve, 5.9 liter Cummins tops out at 460 lb-ft.

It's a good thing power isn't taxable. Because with the Dodge Magnum engine lineup, we have, overall, the most powerful line of pickups on the planet.

*We seem to have the power of endurance, too. Dodge Rams are the longest-lasting full-size pickups on the road.**



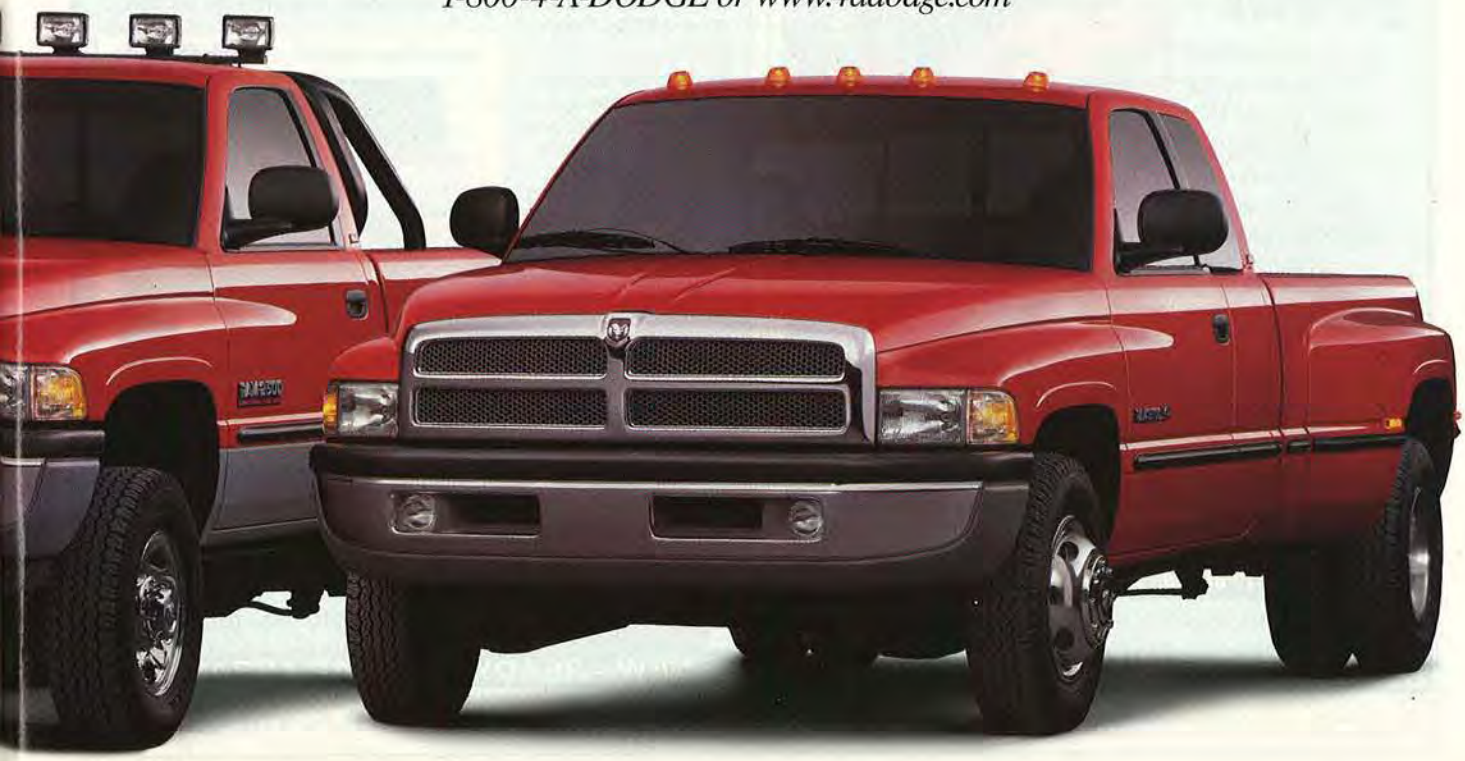
And Dodge Ram has been ranked number one in its class, winning Strategic Vision's Total Quality Award™ for "Best Ownership Experience" for four consecutive years.†

You know, that's got to be pretty taxing for those other guys.

*Based on percentage of 7/88-7/97 new pickup registrations still registered on 7/1/97. Data source: The Polk Company. †Winner of Strategic Vision's 1995, 1996, 1997, and 1998 Total Quality Award™ for "Best Ownership Experience" in the Full-Size Pickup class. 1998 Vehicle Experience Study™ surveyed 32,191 Oct.-Nov. new vehicle buyers of 200+ models after the first 90 days of ownership. Always use seat belts. Remember a backseat is the safest place for children.

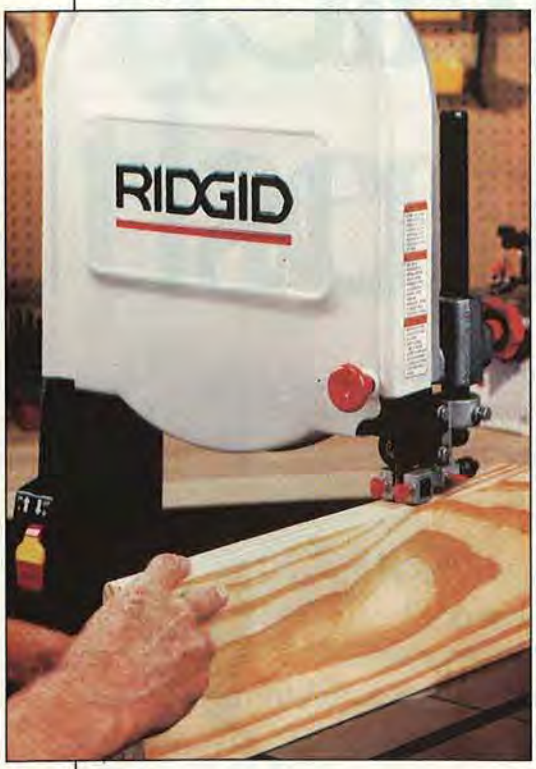
Ram The New Dodge

1-800-4-A-DODGE or www.4adodge.com



Print this article

Ridgid to provide stiff competition in power tools with lifetime warranty



If you've done any plumbing work you're probably familiar with Ridgid brand pipe-working and plumbing tools. Now, you can buy Ridgid power tools for woodworking at your local Home Depot.

The new line will be produced by Emerson Tool Co., primarily at plants in the U.S., although some products will be made in Taiwan and China. For now, the line consists of nine stationary and benchtop woodworking tools, including two 10" tablesaws (priced at about $680 and $500), a 10" compound mitersaw ($230), 16" variable-speed scrollsaw ($190), 6⅛" jointer ($400), 15" drill press ($300), 14" bandsaw ($500), and lathe ($300). Also in the line is a unique oscillating spindle/belt sander priced under $240 which we'll review in an upcoming issue. (The prices listed here are approximate—none of the tools were yet in stores as we prepared this article.)

With the exception of the bandsaw, all of the tools will have U.S.-made Emerson motors. Warranty service and parts will be available by calling Emerson Tool Co. at a toll-free phone number.

In the initial rollout you'll also find an abrasive cutoff machine and a variety of dust collection and air-filtration products, including four shop vacuums. More woodworking machines will be added to the line in the future.

Most of the tools should hit Home Depot outlets this fall, although Ridgid shop vacuums and air-filtration units have been available since mid-May. All of the products come with a lifetime warranty against defects in materials and workmanship, a first in the stationary and benchtop tool business.

"All my tools should be this good!"

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Top Tip winner Kevin Boricic takes a break from horsing around in the shop to show off a project.

Apartment-dweller Kevin Boricic has built cedar chests, a full set of kitchen cabinets, and more. But he doesn't have a shop. He does, however, have a generous father-in-law who doesn't mind letting Kevin use his shop. These two also share a love of the in-laws' century-old home that they are painstakingly restoring

Whether or not Kevin is hard at work in the borrowed shop, he needs a place to stow and lay out his project plans—a place that's convenient, yet out of the way. That need inspired this issue's Top Shop Tip, *right*.

If you've come up with a time- or space-saving idea for your shop, share it with us. It may be worth $40. If we choose your tip as our Top Shop Tip, we'll help fill your shop (or your father-in-law's) with a tool prize valued at $250 or more. To submit a tip, send a letter, including your daytime phone number, and a photo or drawing of your idea to:

Tips From Your Shop (And Ours)
***WOOD*® Magazine**
1716 Locust St., GA-310
Des Moines, IA 50309-3023

We try to publish original shop tips only, so please send your idea only to *WOOD* magazine. And please note that we cannot return submissions. Thanks!

Dave Campbell
GENERAL-INTEREST EDITOR

Hideaway table: best thing since sliced bread

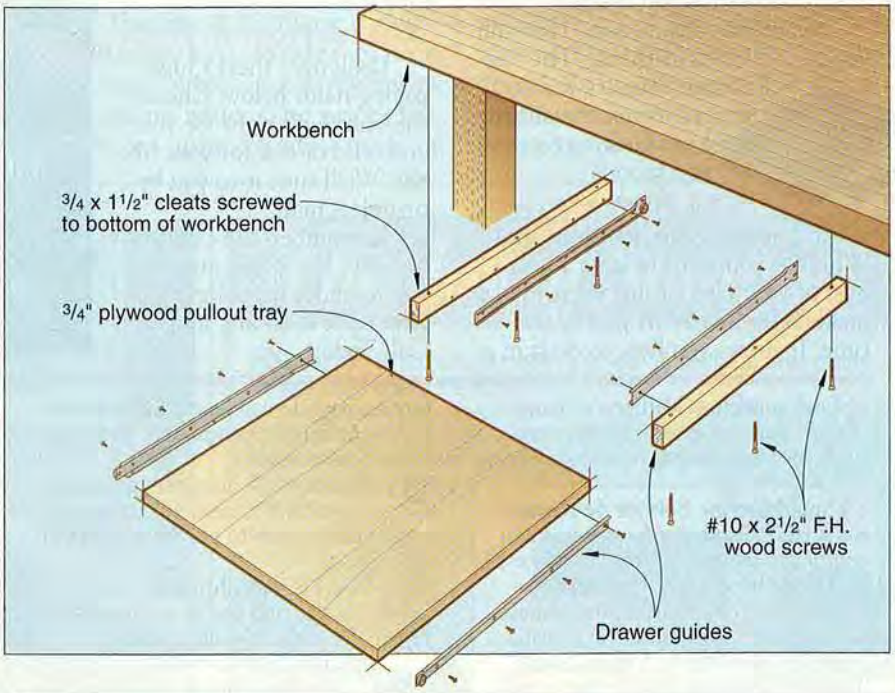
TOP SHOP TIP

In the past when I built a project from plans, those plans either took up valuable benchtop space, or hid tools on the wall. I needed a place to put them where they'd be within easy reach, but out of the way.

Inspired by the slide-away cutting board in my kitchen, I made the hideaway plan table, shown *below*. Because I left a ¾" space between the plan table and the benchtop, I can slide the table away, even if plans are attached to it with thumbtacks or push pins.

—Kevin Boricic, Mitchell, Ontario

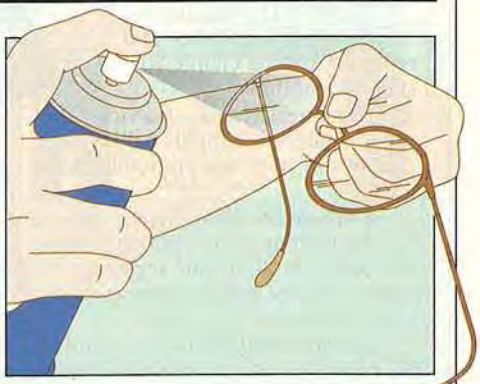
For sending the Top Shop Tip, Kevin Boricic will receive a Delta Q-3 variable speed scrollsaw. Kudos, Kevin!



When you're seeing spots before your eyes

To clean paint overspray off plastic eyeglass lenses, spray them with WD-40, then wet a fingertip with more WD-40 and rub it into the paint spatters. Let the WD-40 soak for a few minutes, then rinse it off with warm, soapy water.

—Charles Hand, Indianapolis



Continued on page 26

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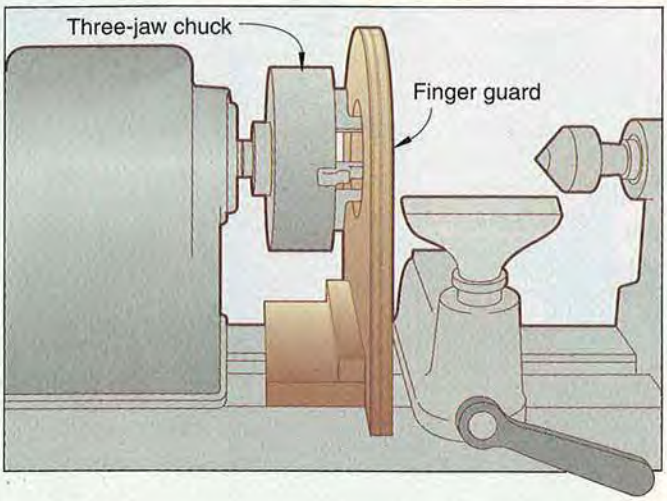
Continued from page 24

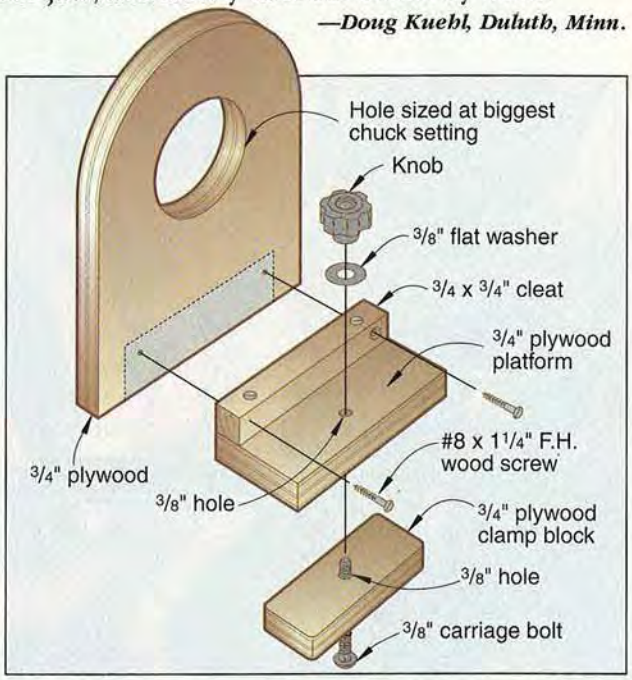
Plywood guard prevents lathe chuck mishaps

After nearly losing a finger to a spinning three-jaw lathe chuck, I came up with a guard that keeps my fingers safely away from the chuck. The base mounts on the lathe bed with a threaded knob so it can be removed easily to change turning stock or your lathe tool setup.

The ¾" plywood guard plate attaches to the base with screws and the hole is sized to accommodate the chuck at its maximum diameter setting. To mark the location of the hole, slide the guard plate up next to the chuck, hold a pencil against one jaw, and slowly turn the chuck by hand.

—Doug Kuehl, Duluth, Minn.





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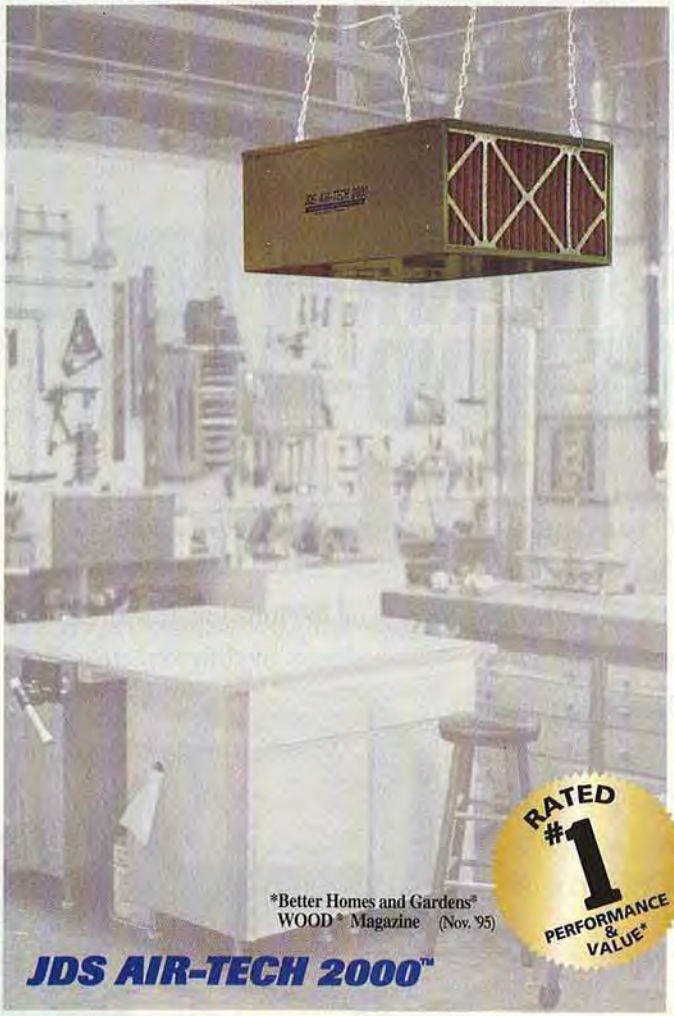

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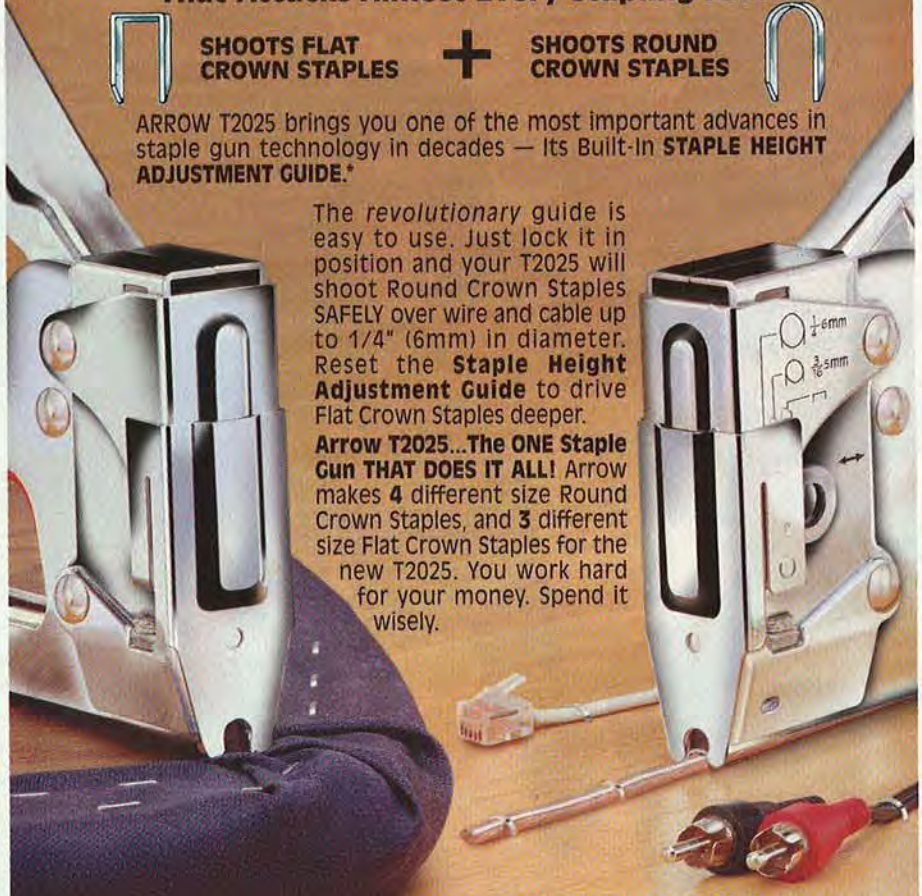

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TIPS FROM YOUR SHOP (AND OURS)

Continued from page 26

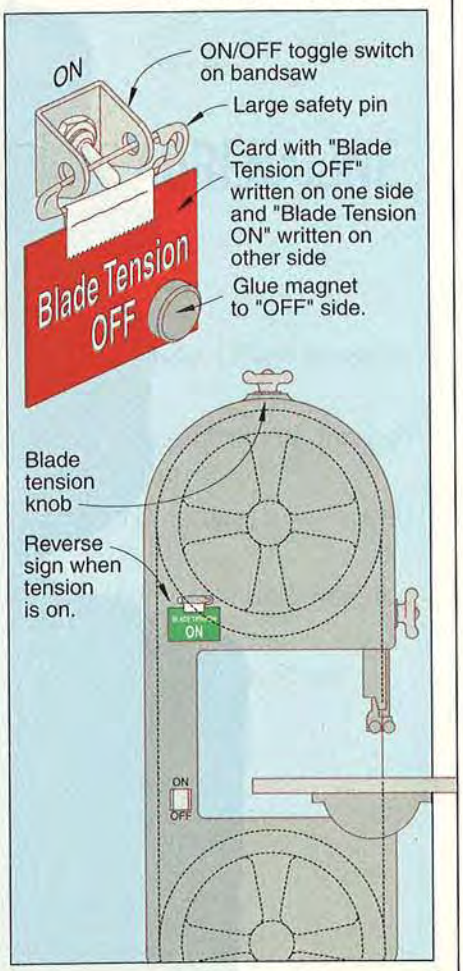
Warning flag prevents bandsaw accidents

The manual of my new bandsaw says to loosen the tension on the blade when the machine is not in use. But I was afraid that I would forget and turn the saw on when the blade was loose.

To avoid this mishap, I made a sign about the size of a credit card and attached it to a large safety pin. One side of the sign says "Blade Tension OFF" in red; the other side says "Blade Tension ON" in green. I also glued a small magnet to the red side of the sign.

After loosening the tension on the blade, I hang the sign, red side out, through the switch lock holes on my bandsaw. This keeps the saw from being started with the blade loose. After tensioning the blade, I hang the magnetic sign, now green side out, on the saw body to tell me the saw is safe to use.

—Tim Collins, Clinton, Iowa


ON
ON/OFF toggle switch on bandsaw
Large safety pin
Card with "Blade Tension OFF" written on one side and "Blade Tension ON" written on other side
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ON
ON
OFF

Continued from page 36

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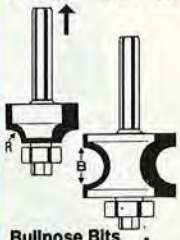

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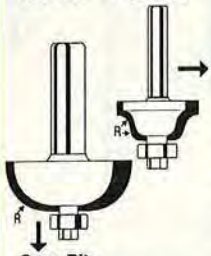

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Cove Bits (continued)
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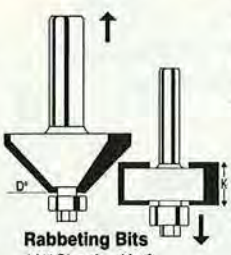
WL-1171	3/8"	$13.
WL-1172	1/2"	$14.
WL-1173	5/8"	$18.
WL-1174	3/4"	$20.

Chamfer Bits
1/4" Shank • Degree

WL-1180	15°	$10.
WL-1181	25°	$10.
WL-1182	45°	$12.
WL-1183	45°	$14.
(for up to 3/4" material)		
1/2" Shank		
WL-1184	45°	$10.
WL-1185	11-1/2°	$12.
WL-1186	15°	$12.
WL-1187	22-1/2°	$12.
WL-1188	30°	$14.
WL-1189	45°	$15.
WL-1190	45°	$22.
(for up to 1-1/4" material)		



Rabbeting Bits
1/4" Shank • Kerf

WL-1220	1/2"	$11.
WL-1220-2	1/16"	$10.
WL-1220-3	1/8"	$10.
WL-1220-4	1/4"	$10.
WL-1220-5	3/8"	$10.
1/2" Shank		
WL-1225	1/2"	$11.
WL-1225-2	1/16"	$10.
WL-1225-3	1/8"	$10.
WL-1225-4	1/4"	$10.
WL-1225-5	3/8"	$10.
WL-1225-6	3/4"	$12.

Roman Ogee Bits
1/4" Shank • Radius

WL-1230	5/32"	$13.
WL-1231	1/4"	$15.
1/2" Shank		
WL-1235	5/32"	$13.
WL-1236	1/4"	$15.

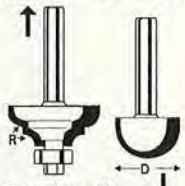
Double Roman Ogee
1/4" Shank • Radius

WL-1240	5/32"	$18.
WL-1241	1/4"	$20.
1/2" Shank		
WL-1245	5/32"	$18.
WL-1246	1/4"	$20.

Ask about our unique "Does It All" ROUTER TABLE

Classical Ogee Bits
1/4" Shank • Radius

WL-1250	5/32"	$18.
WL-1251	1/4"	$20.
1/2" Shank		
WL-1252	5/32"	$18.
WL-1253	1/4"	$20.

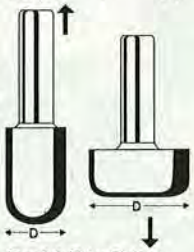


Core Box Bits
1/4" Shank • Diameter

WL-1370	1/8"	$10.
WL-1371	1/4"	$8.
WL-1371-1	3/8"	$9.
WL-1372	1/2"	$10.
WL-1373	3/4"	$12.

Roundnose/Core Box
1/2" Shank • Diameter

WL-1375	1/4"	$8.
WL-1375-1	3/8"	$11.
WL-1376	1/2"	$12.
WL-1377	3/4"	$14.
WL-1378	1"	$16.

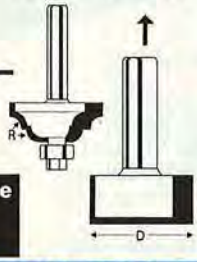


Bowl & Tray Cutter
1/4" Shank • Diameter

WL-1380	7/16"	$13.
WL-1381	3/4"	$15.
1/2" Shank		
WL-1385	3/4"	$15.
WL-1386	1-1/4"	$18.

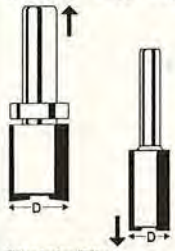
Dado & Planer Bit
1/4" Shank • Diameter

WL-1390	3/4"	$12.
1/2" Shank		
WL-1391	3/4"	$12.
WL-1392	1"	$14.
WL-1393	1-1/4"	$15.
WL-1394	1-1/2"	$16.
WL-1394-1	2"	$28.



Pattern Cutting Bit
1/4" Shank • Diameter

WL-1400	1/2"	$12.
WL-1401	5/8"	$12.
WL-1402	3/4"	$12.
1/2" Shank		
WL-1405	3/4"	$15.
WL-1406	1-1/8"	$16.



Straight Bits
1/4" Shank • Diameter

WL-1001	1/8"	$10.
WL-1002	3/16"	$5
WL-1002-5.5	5.5mm	$5.
(for undersized 1/4" plywood)		
WL-1003	1/4"	$5.
WL-1004	5/16"	$5.
WL-1005	3/8"	$5.
WL-1006	15/32"	$5.
(for undersized 1/2" plywood)		
WL-1007	1/2"	$6.
WL-1008	9/16"	$6.
WL-1009	5/8"	$7.
WL-1010	23/32"	$8.
(for undersized 3/4" plywood)		
WL-1011	3/4"	$9.
WL-1012	1"	$10.
1/2" Shank		
WL-1020	15/64"	$5.
(for undersized 1/4" plywood)		
WL-1021	1/4"	$5.
WL-1019	5/16"	$5.
WL-1022	3/8"	$5.
WL-1023	7/16"	$5.
WL-1024	15/32"	$5.
(for undersized 1/2" plywood)		
WL-1025	1/2"	$6.
WL-1027	5/8"	$8.
WL-1028	23/32"	$8.
(for undersized 3/4" plywood)		
WL-1029	3/4"	$9.

Corner Lock Mitres
For up to 5/8" material
WL-1420-2 1/4" shank $25.

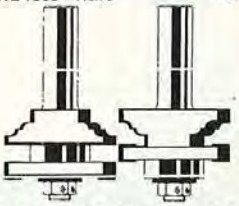
For 1/2" to 3/4" material
WL-1420-1 1/2" shank $30.

For material 3/4" to 1-1/4"
WL-1420 1/2" shank $38.

For the Shaper Lock Mitre WL-1581 $40.

Horizontal Panel Raiser with Undercutter
• 1/2" Shank

WL-1346	Ogee	$49.
WL-1347	Traditional	$49.
WL-1348	Convex (Cove)	$49.
WL-1359	12° Facecut with Quarter Round	$49.
WL-1363	Wave	$49.

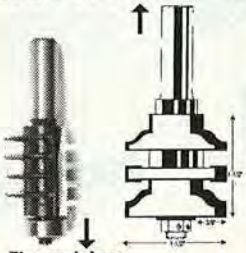


2-piece Rail & Stile Cutter Sets

1/2" Shank		Set
WL-1360	Ogee Profile	$59.
WL-1361	Roundover	$59.
WL-1362	Cove & Bead	$59.

1-piece Rail & Stile Cutter Sets
Just raise the cutter to make the matching cut. No changing or reversing.
1/2" Shank

WL-1365	Ogee Profile	$49.
WL-1366	Roundover	$49.
WL-1367	Cove & Bead	$49.
WL-1368	Wedge	$49.
WL-1374	Dbl Roundover	$49.

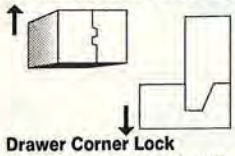


Finger Joiner Router Bit
WL-1429 $39.

For the Shaper WL-1580 $89.

Reversible Glue Joint
WL-1430 1-3/4" Diam $35.

For the Shaper WL-1706 $35.



Drawer Corner Lock
Makes drawer side separation virtually impossible
1/2" Shank
WL-1435 For 1/2" material $30.

SHAPER CUTTERS
3/4" BORE

Corner Round

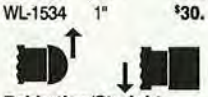
WL-1509	1/8"	$22.
WL-1510	1/4"	$24.
WL-1511	3/8"	$26.
WL-1512	1/2"	$26.
WL-1513	3/4"	$30.
WL-1514	1"	$32.
WL-1515	1-1/4"	$38.

Bead

WL-1520	1/4"	$24.
WL-1521	3/8"	$26.
WL-1522	1/2"	$26.
WL-1523	3/4"	$28.
WL-1524	1"	$30.

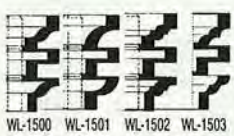
Flute

WL-1530	1/4"	$24.
WL-1531	3/8"	$26.
WL-1532	1/2"	$26.
WL-1533	3/4"	$28.
WL-1534	1"	$30.



Rabbeting/Straight

WL-1540	1/4"	$24.
WL-1541	3/8"	$26.
WL-1542	1/2"	$26.
WL-1543	3/4"	$28.
WL-1544	1"	$30.
WL-1545	1-1/2"	$32.
WL-1546	2"	$48.



WL-1500 WL-1501 WL-1502 WL-1503

SHAPER CUTTERS 3/4" BORE
1-piece Rail & Stile
Just raise the cutter to make the matching cut. No changing or reversing.

WL-1500	Roman Ogee	$89.
WL-1501	Roundover	$89.
WL-1502	Cove & Bead	$89.
WL-1503	Dbl Roundover	$89.

WL-1600
WL-1601
WL-1602
WL-1603
WL-1604
WL-1605

Panel Raisers (Shaper Cutter)
3/4" Bore

WL-1600	Ogee	$59.
WL-1601	15° Facecut	$59.
WL-1602	18° Traditional	$59.
WL-1603	Convex (Cove)	$59.
WL-1604	12° Facecut with Quarter Round	$59.
WL-1605	Wave	$59.

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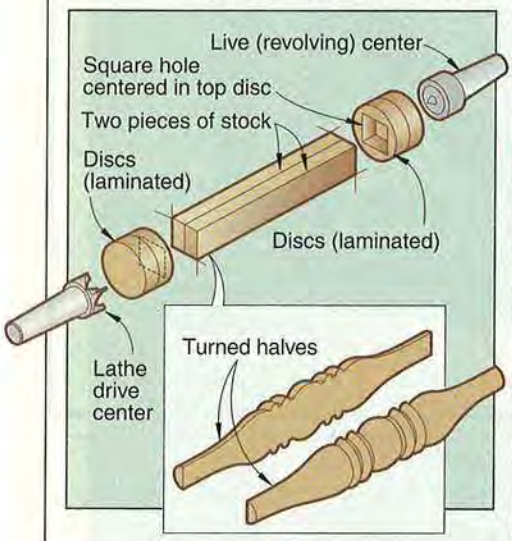
TIPS FROM YOUR SHOP (AND OURS)

Continued from page 32

Get a good grip on split turnings

When split-turning two pieces of wood for applied decorations such as the half-pillars that might go on the front of a cabinet or clock case, I mount stock on the lathe between two discs of laminated ¾" plywood as shown *below*. The discs have square cutouts sized to fit the turning blank. This eliminates having to glue or tape the pieces together, and also prevents splitting.

—Mel Einer, Pewaukee, Wis.



A FEW MORE TIPS FROM OUR WOODWORKING PROS

- Cut perfect miters with crown molding using your mitersaw. Learn how on *page 12*.
- For a reinforced miter joint, use a spline. The drawing with the Nativity music box on *page 18* shows how to do it.
- To draw one or more lines parallel to a curved edge, make the simple jig we used to draw deck planks on Noah's ark. You'll find it on *page 70*.
- Even if you don't build our tilt-top router table, you can use the process on *page 85* to rout an insert for a router plate in another worktop, say a tablesaw extension table.

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WOOD ANECDOTE

Print this article

SASSAFRAS
The tree that held the promise of good health

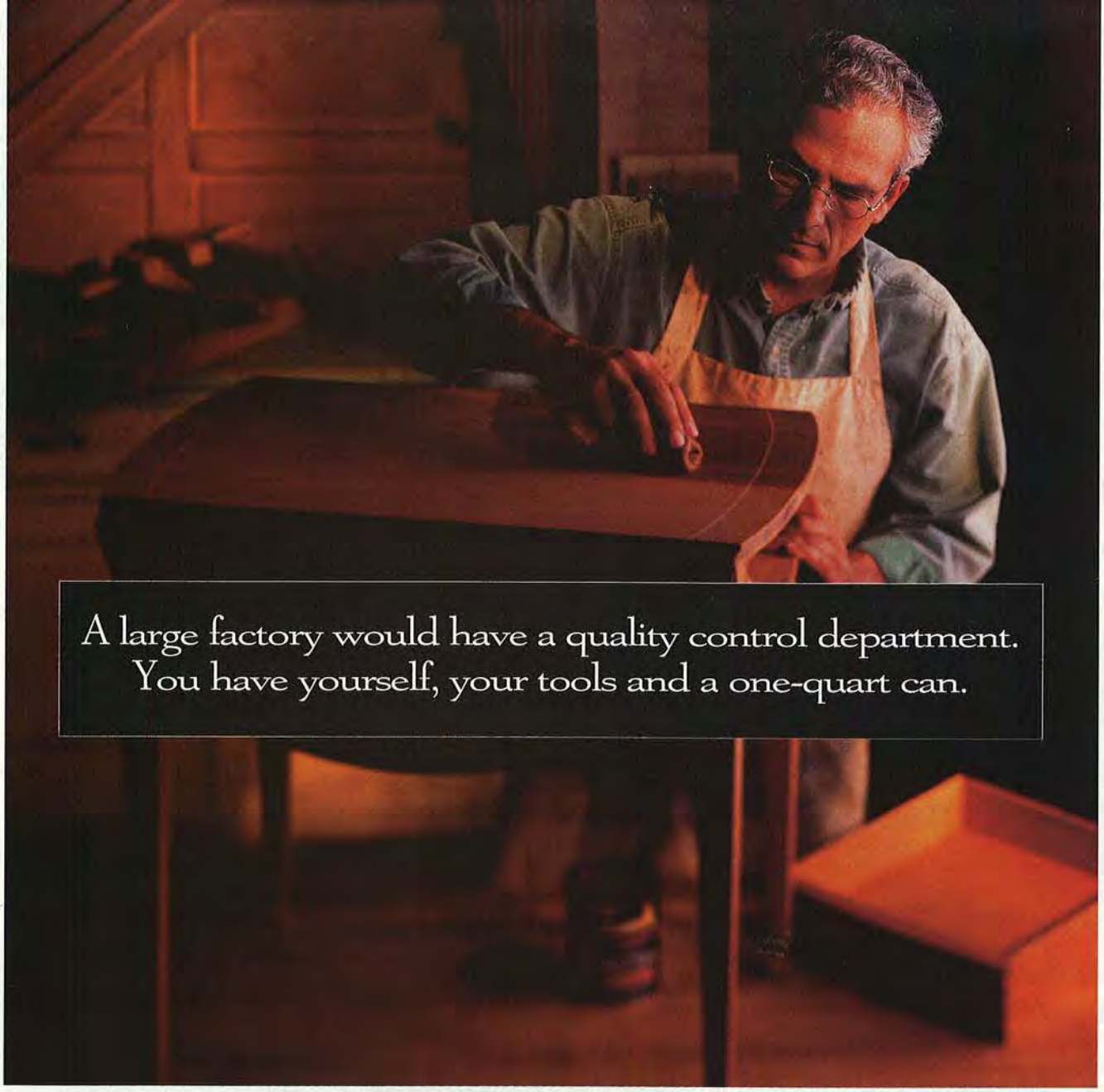
Sassafras (*Sassafras albidum*) grows large in Arkansas and Missouri—sometimes 100' tall and 3' to 4' in diameter. But as a smaller tree, even shrub-size in northern reaches, it's found from Massachusetts to Florida and west to Iowa. Because of its light weight and resistance to water, sassafras has been harvested for boats, barrels, and fence posts. But in early colonial days, the unfounded belief that the roots and bark of sassafras contained wonderful curative properties made them chief export items.

In the hills and hollows of the Ozark and Appalachian mountains, though, sassafras still remains a tree of medicinal folklore. Although sassafras's contribution to good health has been proven fictional, the notion persists that a bed crafted of sassafras promotes sound sleep and therefore longer life. That belief may be based upon the wood's odor, an aroma said to drive away bugs. Mountain folk continue to look to sassafras for hen roosts that check chicken lice, and cabin floors that discourage spiders and termites. And although little more than a bitter concoction, sassafras tea retains its traditional role as a spring tonic to "purify the blood."

Even without medicinal value, oil of sassafras—distilled from the tree's roots—continues as a common ingredient in many products. As flavoring, it finds its way into medicines and candies. For its aroma, it scents soap and candles. And should you happen to saw, plane, or sand sassafras, the sharp-smelling wood may lead you to wonder if the folklore concerning this wood is not somehow true.

A bed made of sassafras is still believed by some to repel bugs, thus promoting sound sleep.

Illustration: Jim Stevenson



You've arrived at that moment. The design, the joinery, every surface on the piece is just the way you'd envisioned. Now it's time to bring it to life. Make it look as good as it did in your mind. Protect it for years to come.

When you open that can, it's reassuring to know that you're not alone. That our reputation is right there on the line with yours, at this moment of truth.

Olympic® Interior Products are a group of professional quality stains and finishes that give you more control during that final step in the process. We've engineered these stains with our exclusive *Absorption Control*™ formula, so you won't have to contend with blotching or streaking or lap marks.

Top off your work with *Olympic*® Antique Oil Finish or your choice of Oil or Water Based Polyurethane, engineered with our *Smooth Flow*™ formula and you've created a piece that begs to be touched. Call 1-800-441-9695 for a retailer near you.

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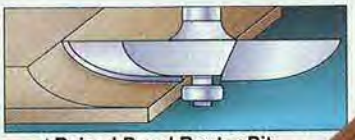
It's simple, inexpensive, and easy with professional production quality MLCS carbide tipped door sets! Our reversible combination bit makes a matching rail and stile frame. The panel raising bit with ball bearing guide makes a perfect raised panel every time!

Includes Instructions and Professional Tips!



✶Raised Panel Router Bit

✶Reversible Combination Rail & Stile Bit
Works with stock from 11/16" to 7/8".

Raised Panel Door Sets ✶Ball bearing included

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#1302	1/2" Shank Router	✶ 3-1/2"	$79.95
#1303	1/2" & 3/4" Shaper	4-5/8"	$99.95

Raised Panel Door Instructional Video
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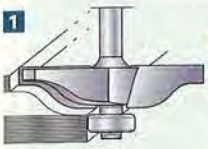
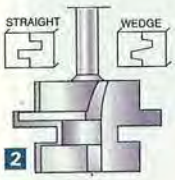
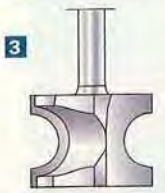


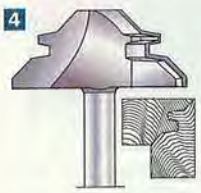
1 OGEE RAISED PANEL
#1423 2" Large Diameter $29.95



2 TONGUE AND GROOVE
#1333 Straight.....$29.00
#1335 Wedge $29.00



3 BULL NOSE
#1330 1/2" Dia. of Circle.....$16.00
#1331 3/4" Dia. of Circle.....$21.00



4 LOCK MITRE BIT
#1433
2" Dia.,Stock thickness: 1/2"-3/4"..$37.50

5 RABBETING KIT
4 depth of cuts: 3/8", 7/16", 5/16", 1/4". Set: 1/4" shank rabbeting bit, 4 bearings (3/8", 1/2", 5/8", 3/4") & hex key.
#1425 1-1/4" Large Diameter..$25.00

6 BRASS PILOTED
Rout into tight spaces and sharp corners. These bits have Brass Pilots, measuring only 5/32" in dia., instead of usual 1/2" bearing.
#1428 1/8" R Round Over.....$16.00
#1429 1/4" R Round Over.....$17.00
#1430 3/8" R Round Over.....$19.00

7 SOLID CARBIDE UPCUT AND DOWNCUT SET
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#1437 1/4" dia., 3/4" cutting length
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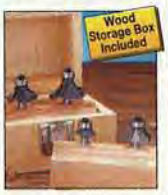

1/4" shank, Carbide Tipped, 4 Round Over Bits with 1/2" OD bearing: (1/8", 1/4", 3/8", 1/2"), plus 3/8"OD bearing & allen wrench.

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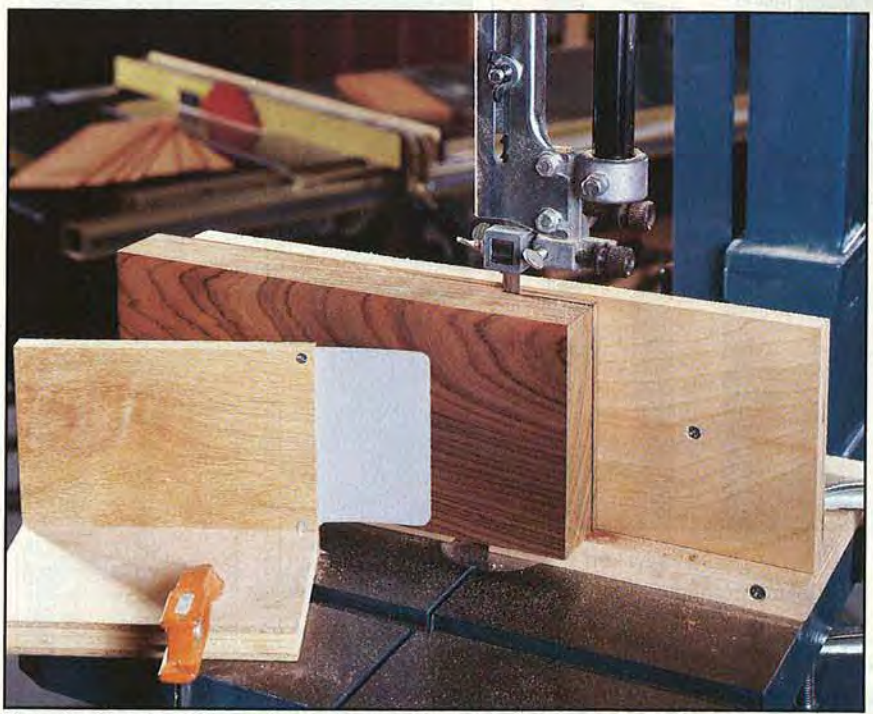
The Wondrous World of Resawing

Learn how we make thin stock from thick in the *WOOD*® magazine shop



To make the most of resawing, saw straight and true—simple work for a tablesaw. Our bandsaw jig prevents the blade twisting that would otherwise waste precious wood.

Wouldn't it be great if you could go to a specialty hardwood store or a home center and just order whatever thicknesses of wood you need for a project? It sure would save a lot of time. But we all know it's not that simple. That's why knowing how to resaw lumber is such a valuable woodworking skill.

First off, slicing your own stock saves you big bucks; you don't waste a lot of pricey material. And by resawing your own material, you can lay your hands on it when you need it.

Fortunately, there's nothing difficult about learning to resaw. And once you're set up to do it—with either a tablesaw or a bandsaw—you've got it made.

Continued

Print this article

Resawing

Let's choose a cutting tool

Which method should you use? Well, a tablesaw does the job quickly and leaves a fairly smooth surface, but the size of the blade limits the width of stock you can resaw. With a 10" tablesaw, you can typically resaw stock that's about 3" wide, cutting from only one edge; less than 6" if you cut in from both edges. The downside: Most tablesaw blades waste a fair amount of wood to the kerf (see our chart *at right*).

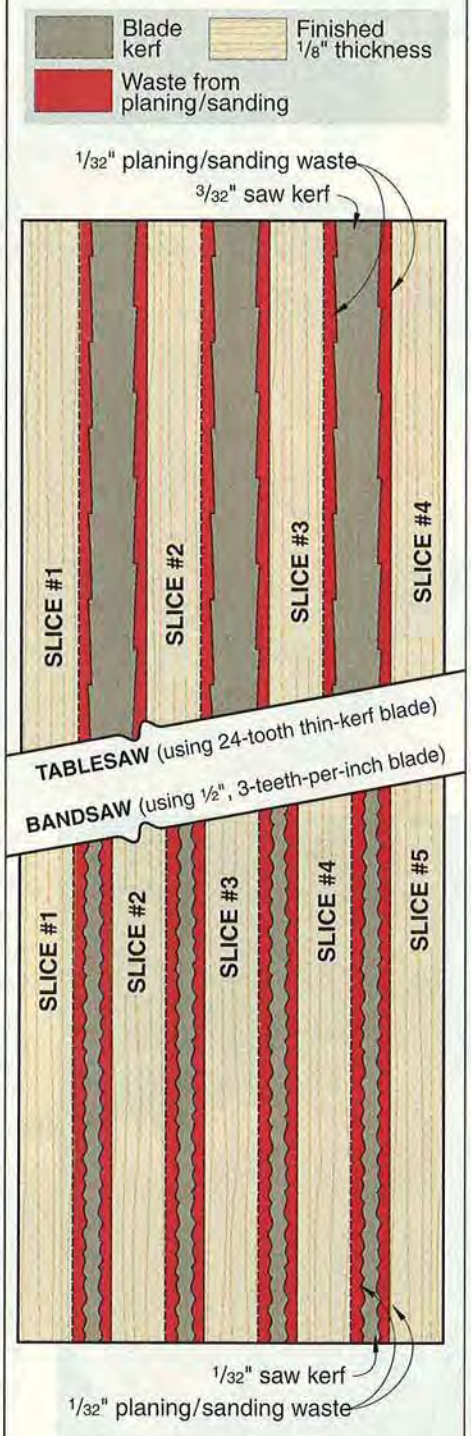
On the other hand, a bandsaw makes it easier and safer to cut thin pieces, and allows you to cut wider stock in one pass—about 5" on most stationary bandsaws, up to about 10" on bandsaws with risers. Resawing with a bandsaw also wastes less wood with a kerf of less than 1/16".

However, changing from a standard blade to a wider resaw blade (see "How Much Blade Do You Need?", on *page 44*) takes time. And, no matter how carefully you work, a bandsaw leaves marks that require planing or considerable sanding to remove. Also, small benchtop models aren't likely to give satisfactory results.

Regardless of which saw you use,

- Use a good sharp saw blade. You'll get faster, cleaner cuts and put less strain on your saw.
- Before you resaw a whole board into pieces, take the first sample and sand or plane it smooth to make sure you end up with the thickness you need.
- Resaw only thoroughly dried lumber. Inconsistent moisture content within the board can cause your resawn stock to cup, twist, and even split as it dries.

A tablesaw will do the job...



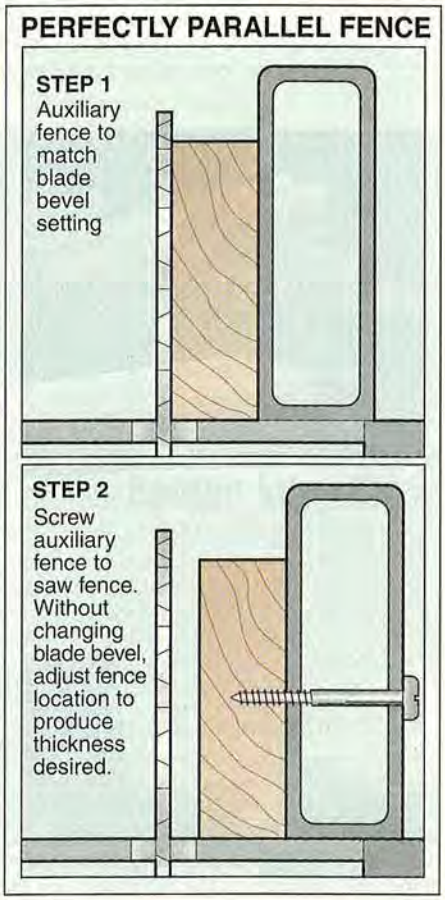
...but the bandsaw is our first choice.

Slicing boards the tablesaw way

Resawing on a tablesaw calls for a zero-clearance insert to keep the thin-cut stock from dipping into the blade slot, and a splitter behind the blade, as shown *opposite,* to prevent binding. The splitter must be the same thickness as the blade, and lower than the cut you're making so the board can pass over the top. And, you'll find the cutting will go much more smoothly if you use a 24-tooth, thin-kerf ripping blade.

To get evenly cut slices, it's crucial to make the blade parallel to the fence. One way to make sure everything matches up is to rip a wooden auxiliary fence and attach it to your regular fence as shown in the drawing *below.*

Use a feather board to hold the stock tightly against the fence, and a pushstick to move it safely forward (see photo, at *top right*).


PERFECTLY PARALLEL FENCE
STEP 1
Auxiliary fence to match blade bevel setting
STEP 2
Screw auxiliary fence to saw fence. Without changing blade bevel, adjust fence location to produce thickness desired.

Resawing on your tablesaw calls for extra caution for a couple of reasons: A board placed on edge tips easily, and the blade will be hidden during most of the procedure.

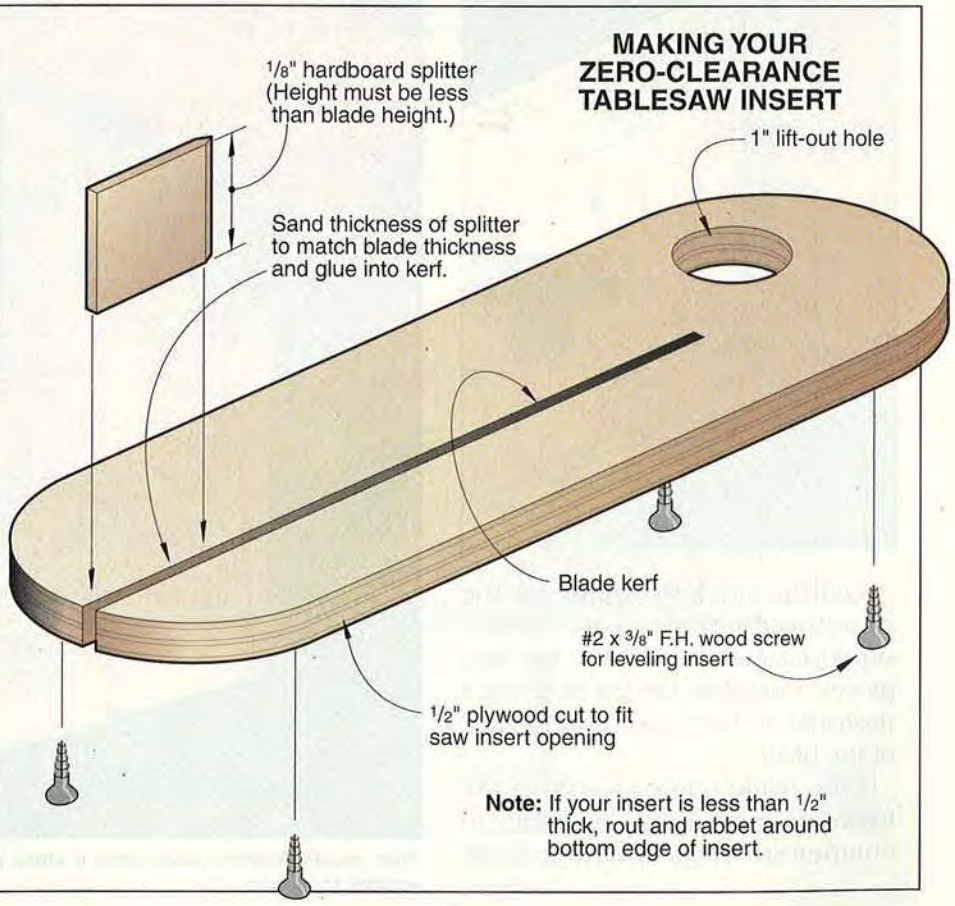
Once you're ready to go, raise the blade to reach slightly more than halfway through the stock, and make the first cut. If you hear your saw bogging down, you're taking too much of a bite. Stop, and lower the blade to about 1" above the table. Complete the first cut, raise the blade ½-1", then make another pass. Raise the blade after each pass until you are more than halfway through the stock.

Now flip the workpiece over, keeping the same face against the fence. Finish the cut with a second pass (see photo *at right).* Again, if your saw bogs down, take gradually deeper cuts, as above.

Continued

Because the fast-cutting teeth of the saw blade are hidden during the cuts, keep your fingers at a safe distance with a pushstick.

A splitter behind the blade keeps the kerf from closing up and binding while you cut.

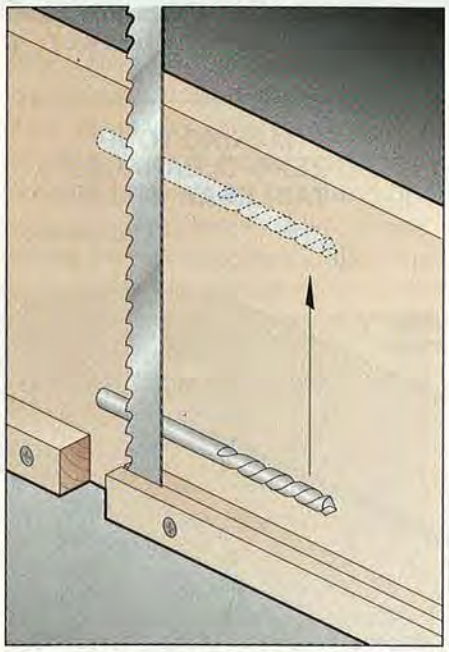

MAKING YOUR ZERO-CLEARANCE TABLESAW INSERT
1/8" hardboard splitter (Height must be less than blade height.)
1" lift-out hole
Sand thickness of splitter to match blade thickness and glue into kerf.
Blade kerf
#2 x 3/8" F.H. wood screw for leveling insert
1/2" plywood cut to fit saw insert opening
Note: If your insert is less than 1/2" thick, rout and rabbet around bottom edge of insert.

Resawing with our bandsaw jig

Construct the resawing jig shown on the *opposite page* using a hard, dense wood such as maple for the blade guide. Parallel the jig to your bandsaw's miter slot by measuring from the jig's edge to the slot, first at the blade, then at the ends.

Adjust the fence for a cut that's 1/32" wider than the final thickness you want, to allow for sanding off saw marks. Position the upper blade guide so that it rests on the top edge of the fence.

Now, make sure that the blade parallels the fence from top to bottom. We used small drill bits as thickness gauges, as shown *below*. Clamp the feather board into the position where shown *below right*, so that it holds the resawing stock firmly against the fence. Now you're ready to resaw.



Feed the stock slowly to get the smoothest surface. A workpiece support may be necessary for long pieces. Complete the cut by using a pushstick to keep your fingers clear of the blade.

If the blade tends to drift to the left or right, rotate the jig slightly to compensate. For example, if the

Continued

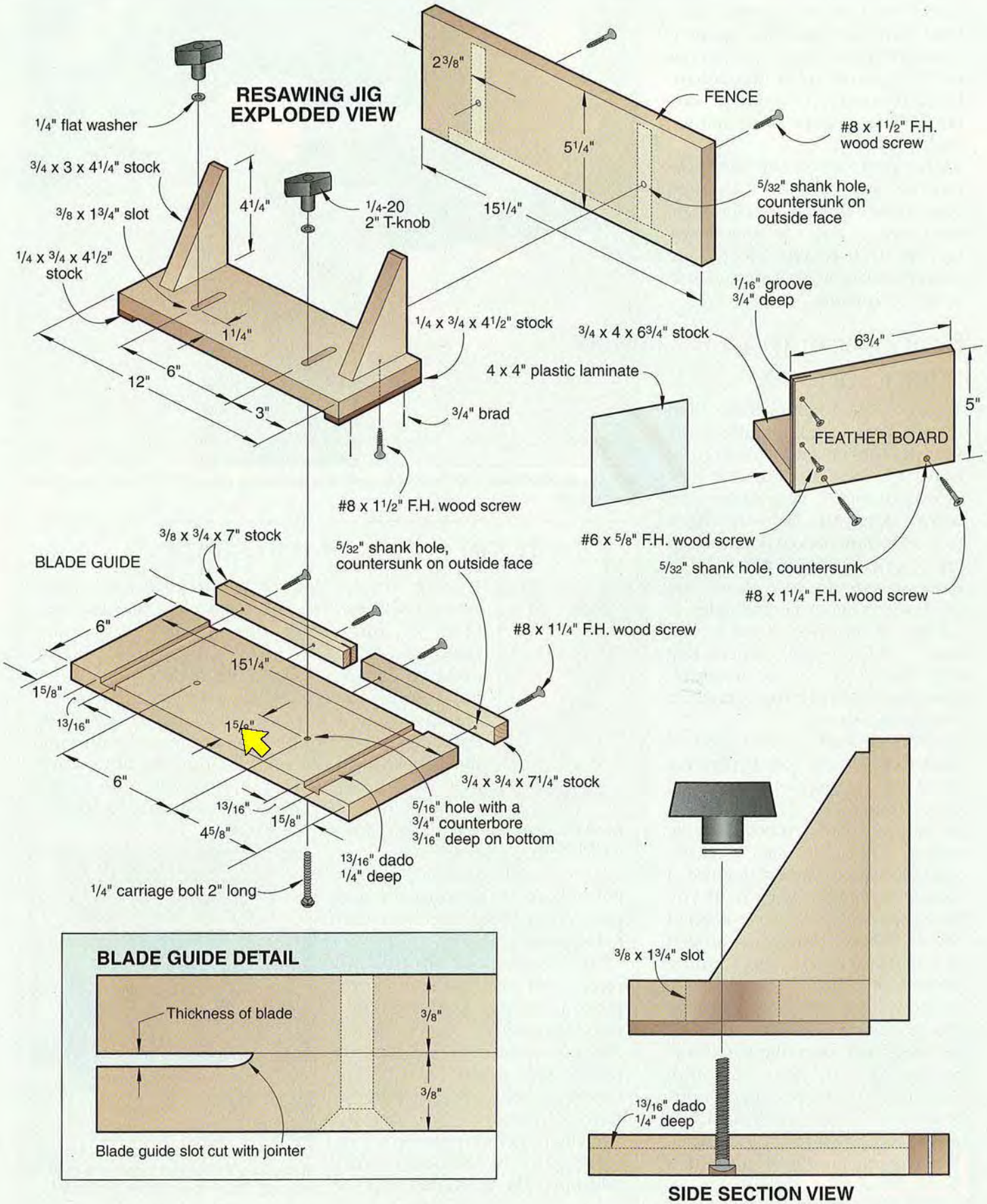
How much blade do you need?

With a well-tuned bandsaw, you can successfully resaw using any standard blade that's wide enough and sharp enough for the job. But for the best results, choose the widest three teeth-per-inch blade that your bandsaw can handle. A wider blade tends to stay on course, guided by its own kerf. That means you'll make straighter, cleaner cuts. A ½"-wide blade works well; if your saw can handle a ¾" blade, that's even better.

Of course, some blades definitely work better than others. Here in the *WOOD*® magazine shop, we had excellent results with a new blade from Laguna Tools. It's called the Timbercut Barracuda and features teeth made from a hard steel called Stellite. It's not as hard as carbide, but Laguna claims it's more durable, less brittle, and can be sharpened up to 10 times. That could make up for the high initial cost: The Barracuda costs about $10.50 per foot.

If you buy a Barracuda or another high-tech, high-cost bandsaw blade, it might be wise to save it for resawing and use a less-expensive blade for less-demanding tasks.

This special feather board uses a small piece of plastic laminate to hold the stock snugly against the fence.


RESAWING JIG
EXPLODED VIEW
1/4" flat washer
3/4 x 3 x 4 1/4" stock
3/8 x 1 3/4" slot
4 1/4"
1/4-20
2" T-knob
1/4 x 3/4 x 4 1/2"
stock
1 1/4"
12"
6"
3"
1/4 x 3/4 x 4 1/2" stock
3/4" brad
#8 x 1 1/2" F.H. wood screw
2 3/8"
FENCE
#8 x 1 1/2" F.H.
wood screw
5 1/4"
15 1/4"
5/32" shank hole,
countersunk on
outside face
1/16" groove
3/4" deep
3/4 x 4 x 6 3/4" stock
6 3/4"
4 x 4" plastic laminate
5"
FEATHER BOARD
#6 x 5/8" F.H. wood screw
5/32" shank hole, countersunk
#8 x 1 1/4" F.H. wood screw
3/8 x 3/4 x 7" stock
BLADE GUIDE
5/32" shank hole,
countersunk on outside face
#8 x 1 1/4" F.H. wood screw
6"
15 1/4"
1 5/8"
13/16"
1 5/8"
6"
13/16"
1 5/8"
4 5/8"
3/4 x 3/4 x 7 1/4" stock
5/16" hole with a
3/4" counterbore
3/16" deep on bottom
13/16" dado
1/4" deep
1/4" carriage bolt 2" long
BLADE GUIDE DETAIL
Thickness of blade
3/8"
3/8"
Blade guide slot cut with jointer
3/8 x 1 3/4" slot
13/16" dado
1/4" deep
SIDE SECTION VIEW

blade wanders toward your right hand, move the jig slightly counterclockwise and reclamp it. A bowed cut will result from inadequate blade tension, a too-narrow saw blade, or feeding the stock into the blade too fast.

After each cut on the bandsaw, run the remaining stock through your jointer or planer. That way, you'll have at least one smooth surface on each resawn piece. One smooth surface might be enough, in some applications.

Smoothing the sawn surface

To remove the bandsaw marks from resawn stock at least ⅛" thick, use your thickness planer with a carrier board. Choose a flat board at least as wide as and 1" longer than your resawn stock. Attach the thin stock to it with cloth-backed double-faced tape. Now run both pieces, thin stock up, through your planer, and finish with a random-orbit sander.

If you're resawing wood to less than ⅛" thick to make veneer, first glue the veneer to its substrate. Then sand it smooth with a random-orbit or pad sander.

Lacking a planer, a portable belt sander can do the job. It removes wood quickly, but not always with precision, so be careful not to gouge the wood or round over the edges. And, this fast-working machine can heat up a thin piece of wood enough to warp it. If you have a sanding frame, place a rim of the desired final thickness around the workpiece for the sanding frame to ride on.

Start with 100-grit paper, and keep the sander moving. Let it float on the wood and rotate the wood end-for-end once or twice so you're sanding in different directions. Switch to a random-orbit sander or pad sander when just a few imperfections remain. Finish up with a block sander.

A bandsaw blade can't tell flesh and bone from wood, so use a pushstick to safely complete the cut.

Joining the edges of thin stock

Book-matched myrtle burl

Making panels from stock less than ¼" thick requires a little creative clamping. Your big bar clamps would crush this super-thin stock like a bug. But, we've found a handy way to join those thin pieces.

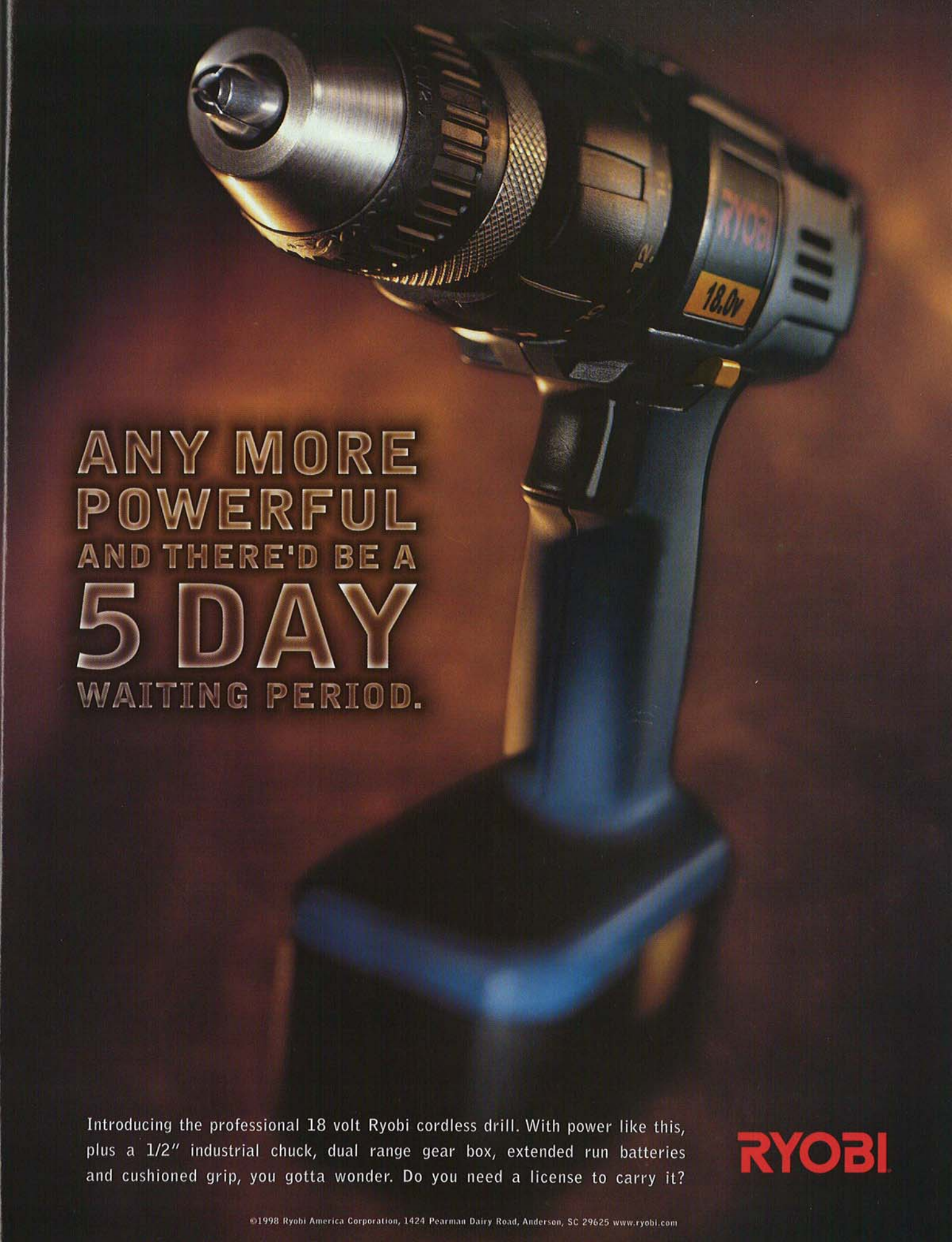
Before you begin resawing, run both edges of the stock through your jointer. Then, slice and sand to thickness.

Flip, rotate, and shuffle the pieces until you find the most eye-pleasing pattern (see the book-matching *above*). After you find the right combination, place two pieces side-to-side, butt them together, and tape that joint in both directions with tightly stretched duct tape as shown *at right*. Flip the assembly over, fold open the joint, and apply a line of glue to each edge. Close the joint and place the assembly, tape side up, on a flat surface covered with waxed paper. Weight the middle, tape down the edges, and let the glue dry.

If the resulting piece will be applied to a substrate—plywood or medium-density fiberboard, for example—white or yellow glue is a good choice for the adhesive.

Duct tape makes a great clamp for thin stock. But, if removed before the glue is fully set, it can also pull the joint apart.

Written by Jim Pollock with Dave Campbell and Jim Downing Project Design: Perry McFarlin, Jim Downing Photographs: Marty Baldwin Illustrations: Roxanne LeMoine



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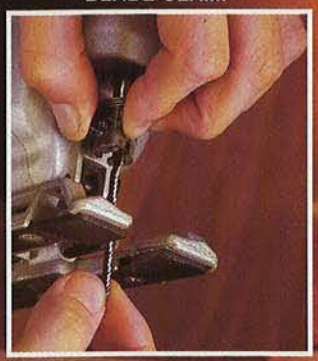

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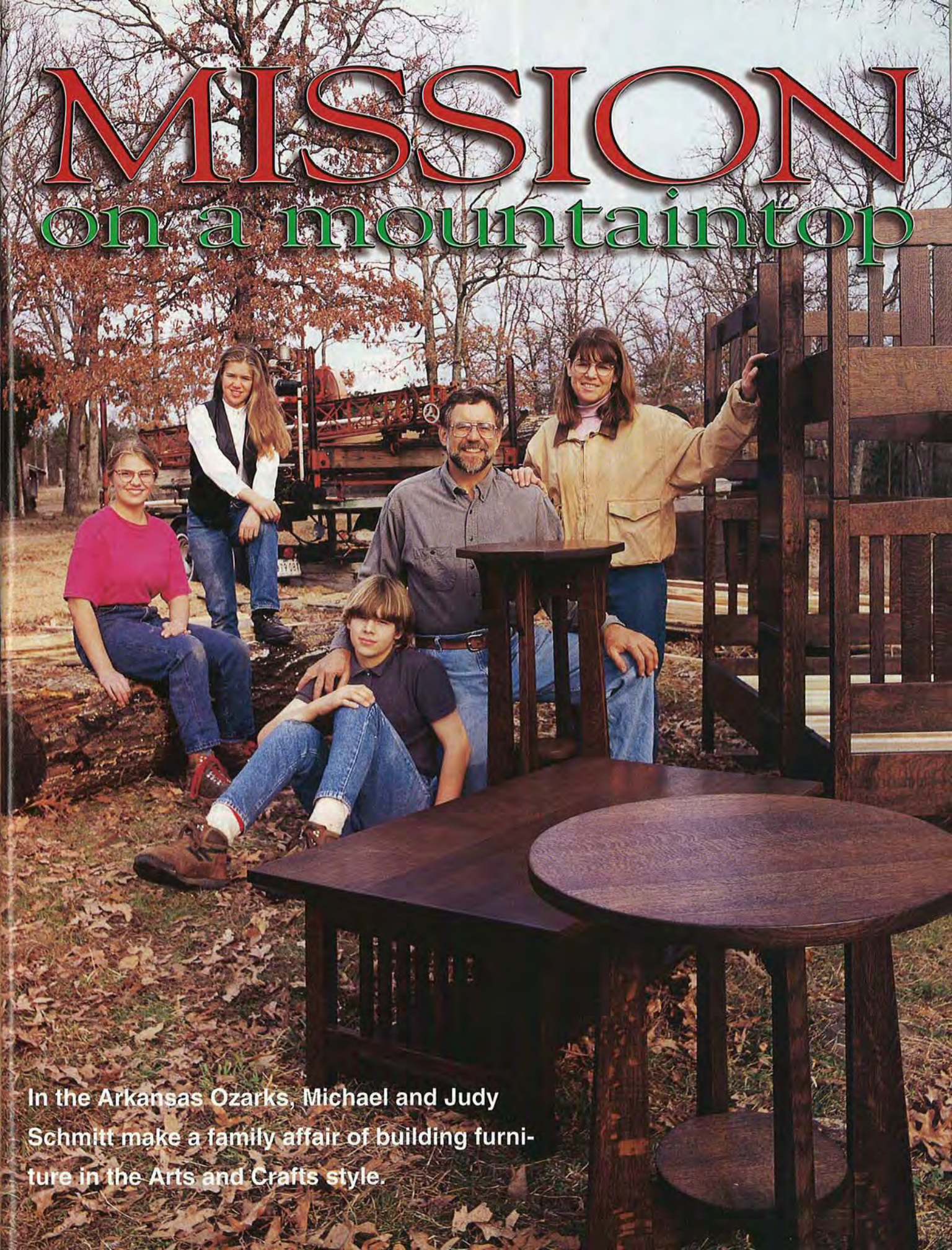
MISSION on a mountaintop



In the Arkansas Ozarks, Michael and Judy Schmitt make a family affair of building furniture in the Arts and Crafts style.

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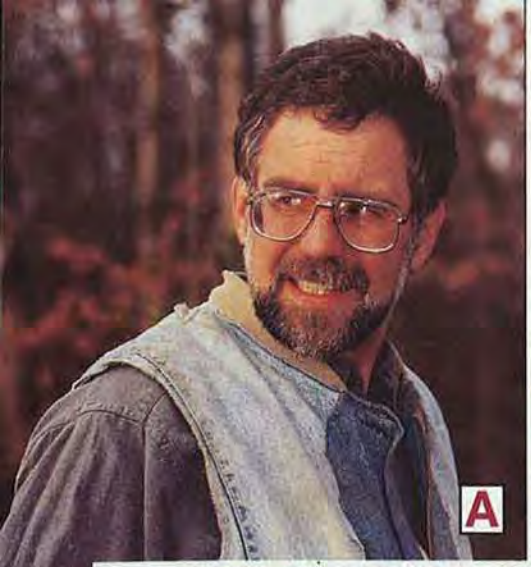
Mission on a mountaintop



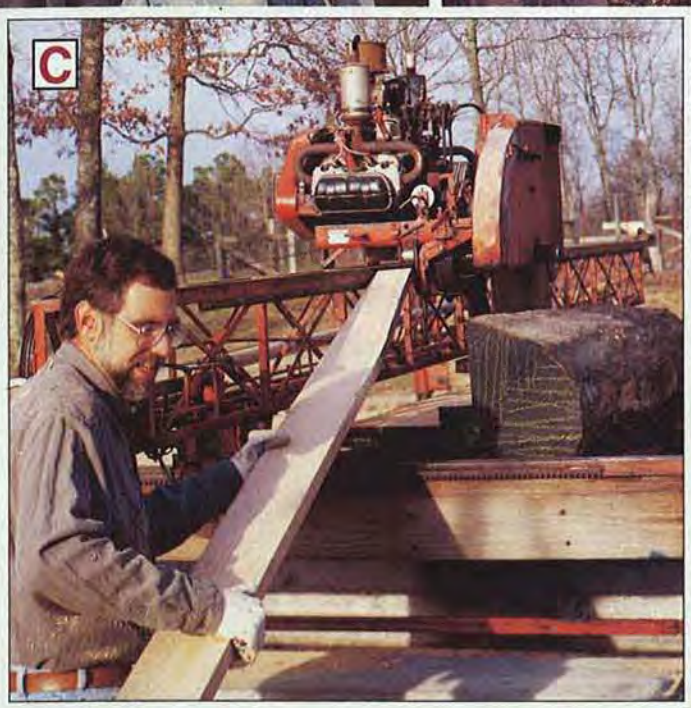
A On Coffman Mountain, Michael has had to learn practical forestry to manage his trees.

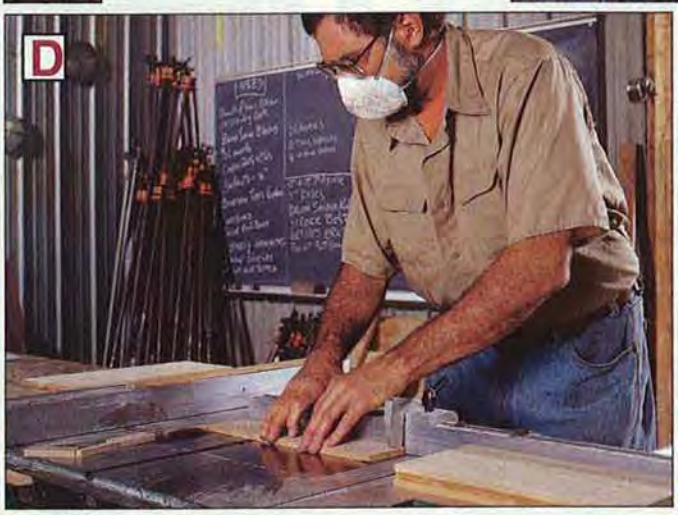
B In the timber tract, Michael excitedly describes how his white oak trees are growing.

C The Mobile Dimension Sawmill with its twin blades rips in two dimensions to produce a board without turning the log.

D After initial machine sanding, the woodworker cross-cuts the furniture parts to exact length on the tablesaw.

E Judy takes a joined top from the outfeed of their old but dependable double-drum sander.





The Buffalo River meanders its scenic way through sandstone bluffs just a 15-minute drive from Coffman Mountain, the highest point in northwest Arkansas's Carroll County. In one valley below, farmers graze Charolais cattle. In another, they grow field corn and tender blueberries. The hillsides and ridges between are cloaked with hardwood forest—ash, cherry, white oak and red, hickory, sycamore, maple, walnut, elm, basswood, black gum, and stands of sassafras.

Surrounded by a veritable sea of trees, the mountaintop seems perfect for a sawmill and woodworking shop. Michael Schmitt and his wife, Judy, thought so. That's why they bought 160 acres of it 19 years ago. And today, their Mountain Springs Woodcraft is a thriving family operation, handcrafting incomparable Arts and Crafts furniture in the Gustav and L. & J.G. Stickley style.

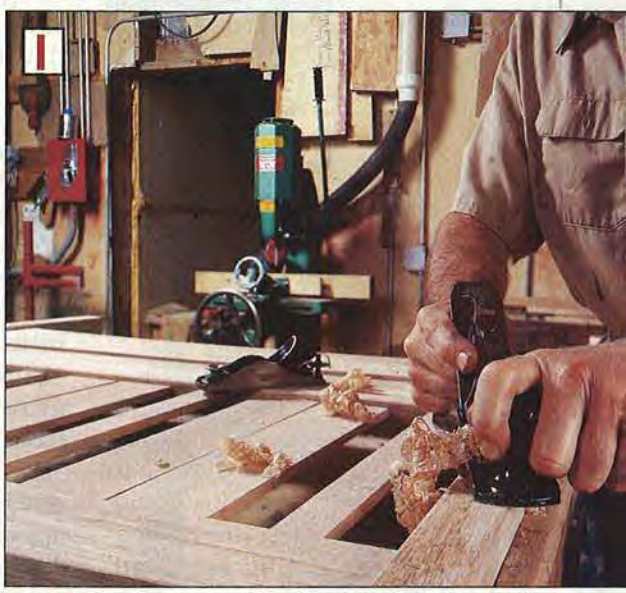
From tree to board atop Coffman Mountain

Walking through the mountaintop timber with Michael, 50, is like a personal tour through a rare-car collection by its proud and knowledgeable owner. "See that big red oak. Lightning hit it, but I'll still get $2,000 worth of top-grade boards," he says, throwing his arms into the air as if measuring its width.

A little farther into the woods, he again stops. "Look at the stumps scattered through here. I thinned 10 years ago so I'd get better growth from these white oaks. Seems to be working."

Leaving the trees, we hike to the mill, a Mobile Dimension Sawmill (Model 127) that Michael purchased in 1978. In one pass, its opposing blades can saw out a board as large as 7×12" and up to 20' long, with no edging required later. With a forefinger, Michael traces the crayon lines he's put on the end of the log in the carriage. "Here's how I'll saw this one," he explains."Most will be 5/4 boards, some quartersawn and some riftsawn, all without turning the log."

Finally sitting, Michael admits that he loves rough-sawing. "There are so many variables—



F Glued-up assemblies for 60 baby cribs await staining in a corner of the shop. They're all bound for a dealer in Long Island, New York.

G At the tablesaw, a shop-built jig holds the workpieces in exact position for tenoning.

H To cut a mortise, Michael first drills a hole at each end of the slot, then removes the wood in between.

I With a hand plane, the craftsman can smooth any rough spots on an assembly faster than with a sander.

compression wood, off-center heartwood, twisted grain. The list of gremlins in each log goes on and on. If you understand how to deal with them, you have tabletops. If not, you have firewood."

Although evident by now that this craftsman loves his stock as well as the trees from which it comes, this romance story needed another chapter. Michael leads the way to the kiln. "After air-drying on stickers from three to five months, depending on the species, I load it into the kiln, which holds 5,000 board feet," he says as we wander through the neatly stacked, air-drying lumber.

The Nyle Model L200 dehumidification kiln nestles against the rear of the workshop, into which the kiln-dried wood is eventually unloaded for storage. Michael built the 14×14×25' kiln room, insulating it with rigid urethane foam under the concrete-slab floor and 12" of sawdust in the walls and 36" in the ceiling—all surface-sealed against escaping moisture from the wood.

"During the drying operation, I probe the wood at different places with sensors so I can continually monitor its moisture content," he says, proudly displaying a pair of cabled probes connected to the kiln controller. "I dry wood to 5 percent moisture content, then turn off the kiln, leaving the fans to run several days to equalize the load. If necessary, I turn it on for a day to bring the wood to an exact 6 percent. Sawing and drying my own lumber is the way I'm able to stay competitive with the large quality shops that can buy 3,000-5,000 board feet of high-grade lumber at a time. I actually paid for the kiln with the first load I dried!"

All-in-the-family furnituremaking

Michael and Judy take seriously the original philosophy of the English Arts and Crafts movement: Enrich your life by making it simpler and by seeking a pleasing balance between living and making a living. That's why they homeschool their three children—twin daughters Alana and Jennifer, 14, and son Christopher, 12. On a

A fluorescent additive in the glue helps Alana and Jennifer spot any squeeze-out as it glows under a black light.

normal day, the youngsters' first priority is study—about half a day of it. The other half they devote to chores: feeding the poultry, tending the three-quarter-acre vegetable garden, getting firewood, and helping with the woodworking (although never touching the machinery). In exchange, they share in the woodworking profits, too, saving two-thirds of what they earn for college.

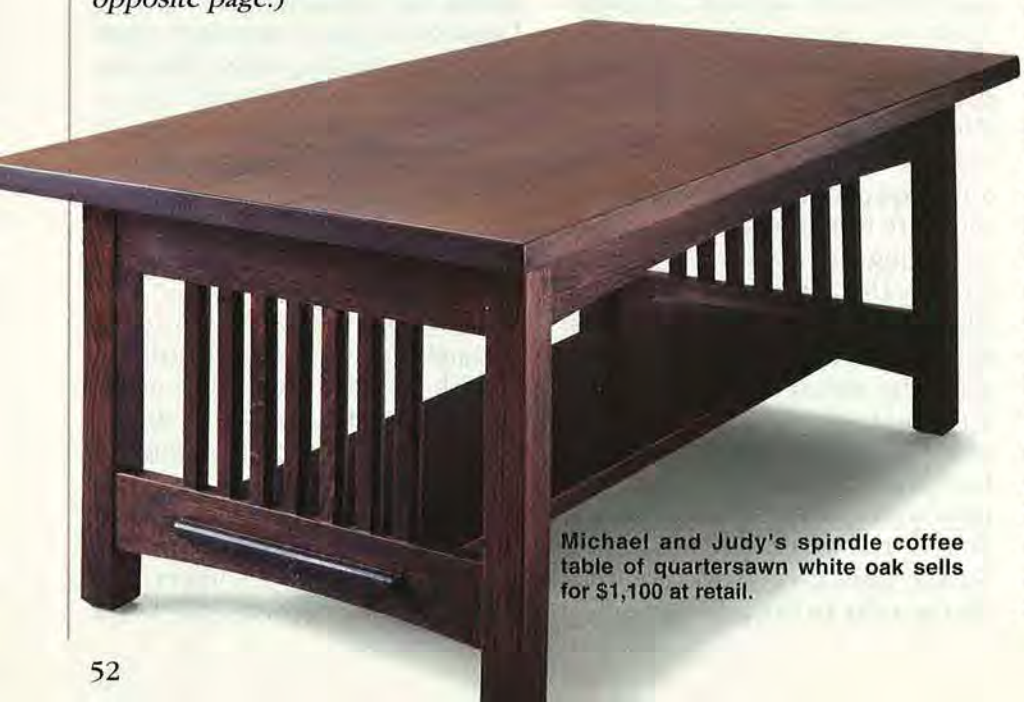
"The furniture begins with Judy," explains Michael, opening the shop door. "She has the artistic talent to do all the designs and drawings for the furniture. Then I figure out how to build it, such as with this high chair." (See photo, *opposite page.*)

Mission on a mountaintop

Michael and Judy have been infatuated with Arts and Crafts furniture since 1979, when they bought a houseful of the English variety for a song. "An antique dealer parted with it because most of the pieces needed repair," Judy notes. "Then, we read about Gustav Stickley and his American Arts and Crafts furniture that came to be called mission. We appreciated the sturdy simplicity of the style and the joinery."

"And the wood traditionally used in it is white oak," adds Michael. "That's what we mostly have growing here. So in a way, the trees dictated what to build."

By 1986, the nation's interior design community was starting to appreciate mission furniture, too. An ad that year placed in *The Crafts Report* for the reproductions Michael was building got immediate, positive response. The Schmitts' furniture also drew praise from collectors, who marveled at the authentic look and lustrous finish. "Thus began the accelerated alteration of all our previous processes—mainly sawing dimension lumber for construction—to the reality of sawing and working quartersawn oak for Stickley furniture," he laughs.



Michael and Judy's spindle coffee table of quartersawn white oak sells for $1,100 at retail.

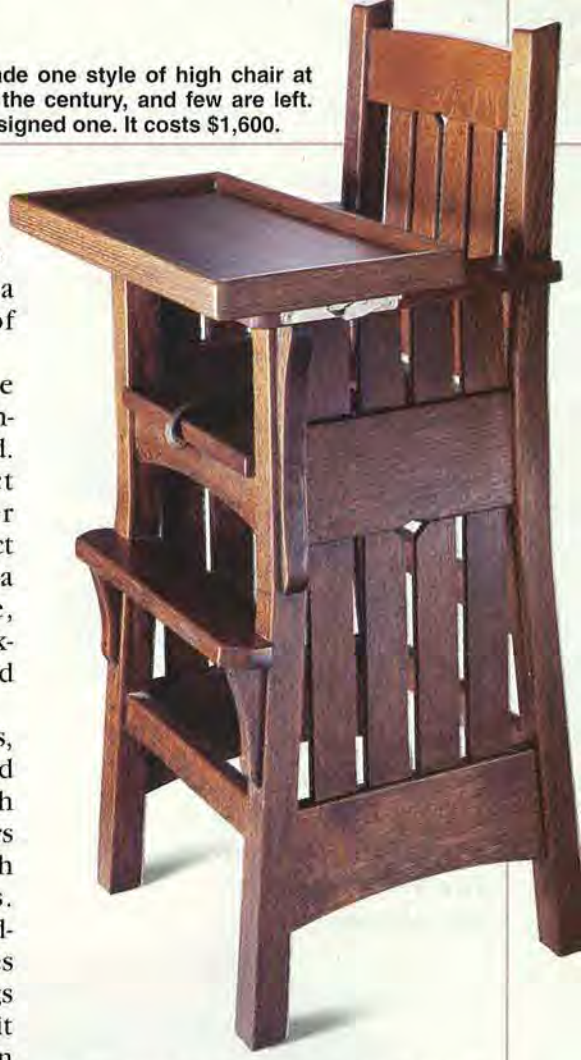
Stickley himself would have loved this mission

"Remember, the original Stickley that fetches such a high antique price today is really factory furniture. It wasn't handcrafted. There were tens of thousands, if not hundreds of thousands, of pieces made. Why isn't it all still around?" Michael questions. "Because it self-destructed. Most homes were heated with coal or wood, and the mission furniture dried out and ripped itself apart."

The mission furniture built at Mountain Springs Woodcraft sells for 30 to 50 percent more than the Stickley line that's available in stores. One hundred years from now it, too, may start to fail. But it won't be due to lack of effort on Michael's and his family's part.

"Even though we build 10 of the same pieces at a time, they're all handmade. And compared to [the new] Stickley, there is no comparison because of our careful grain matching and our finish," he explains. "Following final sanding, we go over the wood five or six times with up to 220-grit after wetting it with hot water to raise the grain. At Stickley, they can't take the time to do that."

Who is willing to pay for that price differential seems an obvious question. "People on the East Coast—especially New York—who want the quality," Michael says flatly. "But I also tell my clients that if they can buy at least $5,000 to $6,000 worth—maybe four or five pieces—at a time, then I can make it in a production run and usually knock 20 percent off from the price. And if they don't have the money available immediately, they can pay me over six months. I don't have the overhead that a lot of shops do, and I get an economy of scale. So it's as profitable for me as if I were making one piece at a time and charging more for the piece. Several clients have filled rooms



Stickley made one style of high chair at the turn of the century, and few are left. So Judy designed one. It costs $1,600.

with three or four $6,000 purchases. And we know they'll be getting more."

There's another interesting way Michael markets his furniture. Because he makes multiples, when he gets an order for a piece that he'll have to build, he calls other clients to see if they're interested, too. That way, he may sell six or eight and have two to keep on hand as inventory.

Working up the wood with an eye for the grain

Having his own sawmill has distinct advantages over and above the obvious cost savings, according to Michael. For one, he's able to saw boards to the widths he uses most frequently in the shop—4", 5", 6", and 8". "I always saw a 12" face into a 4" and an 8" or two 6" boards," he says. "That way, there's very little ripping except to edge a jointed board."

The radial-arm saw meets all boards as they come from the kiln. But it's not a random operation. "I have made up cutting lists that represent the parts for producing multiples of a piece as piles of a certain size," Michael begins to explain. "This way, whoever is cutting can concentrate on the grain pattern rather than the count. This process goes a long way toward getting a piece of furniture off to a good start. And because we can then select wood with matching grain from the cut pieces, the result is much more stunning furniture."

Following the cut-off sequence, the batch of boards moves to the 8" jointer. As Michael likes to say, it's there that they "find the board inside the lumber" as one side is faced and one edge-jointed. A light dressing at the planer then readies the boards for the double-drum sander where they receive a bit more finishing with 60-grit to arrive at 3/32" over finished thickness. "It's here where we can get a good look at the available grain matches among the boards," says Judy. "We like to balance the rays and flecks in a piece so that you see some of them from every angle."

From the sander, they take the boards to a tablesaw with a thin-kerf rip blade and a power feed. There they're ripped to exact dimension plus 1/64" for later cleanup. For crosscutting to exact length, the boards move to a tablesaw with a sliding table, then to either the mortising workstation or another tablesaw fitted with a dado set for tenoning.

After either of these operations, Judy or Michael runs the wood under another drum sander with 120-grit or to the stroke sanders where the boards pass through under 80-150-grit abrasives. "Many pieces, though, get hand-planed instead of sanded," notes Michael. "I can take a pile of legs that have been sanded to 60-grit and get them to a smooth finish in a third of the time of going through all the sanding grits."

The last step in preparing the wood is actually a four-part process. The crew wets the pieces with hot water, lets them dry, then sands them with random-orbit sanders. "First, we back up on the grit from the last sanding, to 120- or 150-grit," says Alana, "then we wet, dry, and sand three more times up through 220-grit. If Dad has hand-planed the pieces, the grain hardly rises, and we don't sand as much."

Once all the raised grain has been knocked down, Judy and the young craftsmen begin assembling the boards into furniture. As shown *opposite*, the glue contains a fluorescent additive that glows under black light, making it impossible to miss any squeeze-out. (The black-light fixture is the type used to light fluorescent posters and artwork. It's available at lighting stores for about $25. Mail-order woodworking supply companies offer a flashlight-type black light for about $70.)

In the Schmitt workshop, Michael sprays on the final finish, but it's Judy and the kids who do the all-important staining. To find out how they achieve the rich tones that allow the grain of the quarter- and riftsawn wood to show so dramatically, turn to the article "An Arts and Crafts Finish Without the Fumes," *page 74.*

More mission from the mountain, and plans, too

For the Schmitts' brochure and a list of available mission-furniture plans, send a business-size, self-addressed, stamped envelope to: Mountain Springs Woodcraft, 478 CR9590, Green Forest, AR 72638. Add $6 (U.S.) for a complete 10-page finishing guide for mission furniture.

Written by Peter J. Stephano Photographs: Wm. Hopkins

Victorian-Style BIRD FEEDER

Print this article

Looking for a gathering place for your fine-feathered friends? Then try this traditional tray feeder featuring painted columns and an attractive cedar-shingled roof. The screen on the bottom helps keep the feed dry and the birds healthy. And, the feeder mounts easily to either a pipe or deck railing for your viewing pleasure.

A sturdy base starts things off

1 Cut the two end blanks (A) to the size listed in the Bill of Materials. (Because of their rot resistance, we recommend using cedar or redwood.) Keeping the edges and ends flush, stick the two end blanks together with double-faced tape.

2 Cut the full-size end pattern (A) from the *WOOD PATTERNS®* insert in the center of the magazine to the outlined shape (1¾×10½"). Using spray adhesive, adhere the paper pattern to one of the endpieces (A).

3 Drill 1/16" holes through both blanks to mark the locations of the dowel-hole and the screw-hole centerpoints. Mark the locations along the top edge, and drill a ¼" hole 13/16" deep into each piece for attaching the columns to later.

4 Bandsaw and sand the taped-together ends (A) to shape.

Continued

Bill of Materials

Part	Finished Size T	W	L	Matl.	Qty.
BASE					
A ends	¾"	1¾"	10½"	C	2
B cross members	¾"	1⅛"	9½"	C	2
C* supports	¾"	1⅛"	11"	C	2
D* supports	¾"	1⅛"	8"	C	2
E bottom	¾"	6¾"	7½"	C	1
ROOF ASSEMBLY					
F supports	¾"	2½"	11⅜"	C	2
G cross member	¾"	1½"	9½"	C	1
H ridgeboard	¾"	2¼"	13"	C	1
I* slats	9/16"	1¾"	13"	C	6
J top	¾"	1½"	13"	C	1
K* shingles	3/16"	1⅝"	2"	C	16
L* shingles	3/16"	1⅝"	2½"	C	18
M* shingles	3/16"	1⅝"	3"	C	16
N* shingles	3/16"	1⅝"	1¾"	C	18
O ridge cap	3/16"	3"	13"	C	1

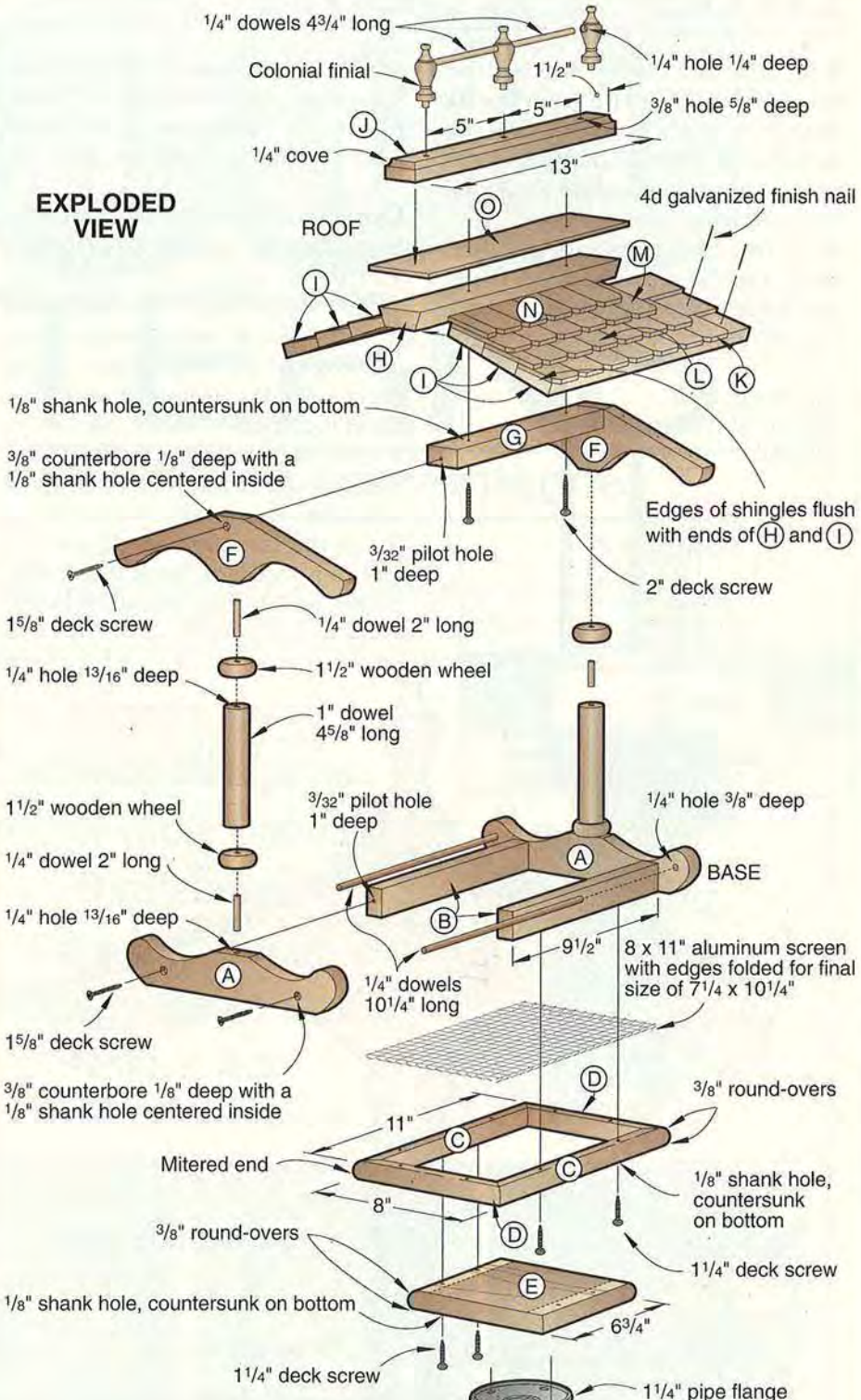
*Initially cut parts marked with an * oversized. Then, trim to finished size according to the how-to instructions.

Material Key: C–choice of cedar or redwood.

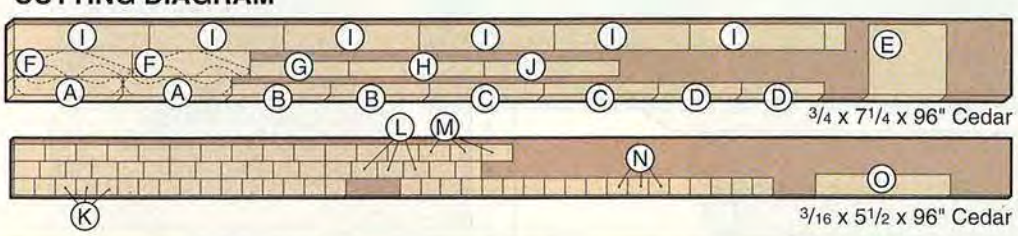
Supplies: 4–#12×¾" flathead wood screws, 12–1¼" deck screws, 6–1⅝" deck screws, 2–2" deck screws, 4–1½"-diameter wooden wheels, 3–finials, ¼" dowel stock, 1" dowel stock, 8×11" aluminum screen, 12–4d galvanized finish nails, 1¼" pipe flange, 1¼" pipe, exterior primer and paint.

Hardwood kit. All the individual pieces shown on the Cutting Diagram cut oversized from the thickness and species listed in the Bill of Materials. Plus, the hardware and dowels (not including the paint, primer, pipe, or pipe flange) noted in the supplies listing at the end of the Bill of Materials. Kit no. W109, $36.95 ppd. Heritage Building Specialties, 205 North Cascade, Fergus Falls, MN 56537. Call 800/524-4184 to order.

EXPLODED VIEW



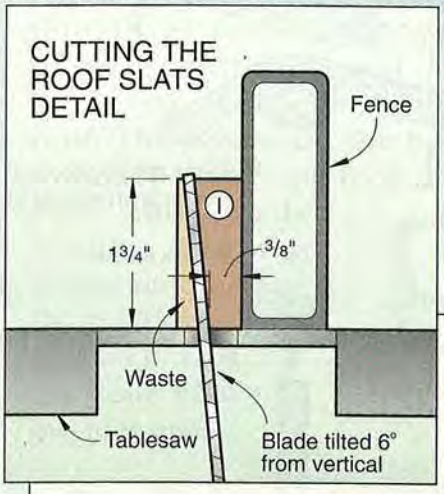
CUTTING DIAGRAM



BIRD FEEDER

5 Separate the blanks, and remove the tape. Using the previously drilled 1/16" holes as guides, drill the dowel and screw-mounting holes to the sizes noted on the Exploded View drawing.

6 Cut two 10¼" lengths of ¼" dowel stock. Cut the cross members (B) to size. Glue and clamp the cross members (B) and ¼" dowels between the ends (A). Drive the screws to further strengthen the base assembly. Later, remove the clamps and fill the holes with wood putty. Sand smooth.

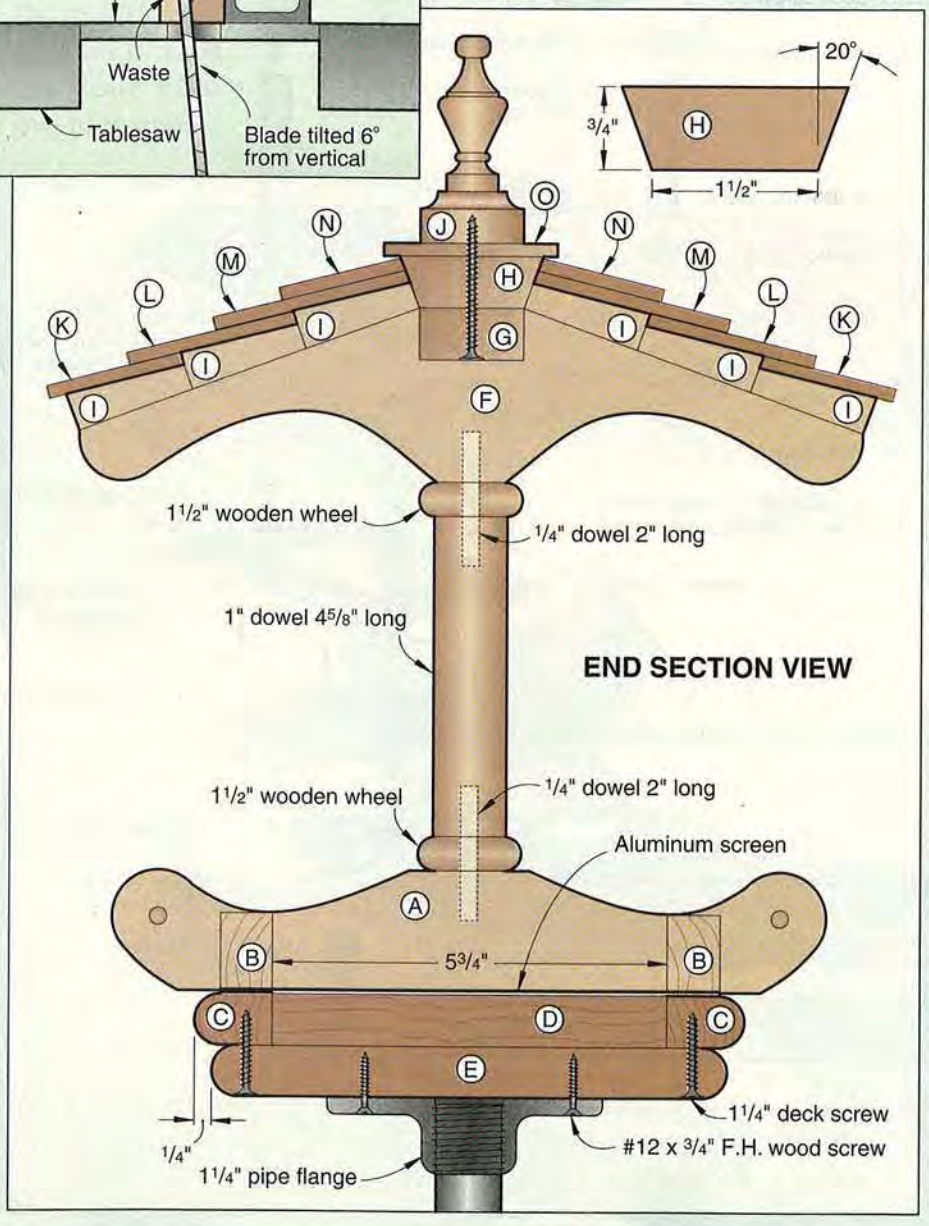


Construct the base bottom support for extra strength

1 Cut a piece of stock to ¾×1⅛×40" for the screen supports (C, D). Rout ⅜" round-overs along one edge of the strip. Miter-cut the pieces (C, D) to length and glue them together.

2 Drill the mounting holes in the bottom side of the screen support assembly.

3 Cut the base bottom (E) to size, and rout its edges. Mark the centerpoints, and drill the mounting holes.



A weathertight roof assembly comes next

1 Shape the roof supports (F) using the same method used to form the ends (A).

2 Cut the cross member (G) to size, making sure it spaces the roof supports so they align with the base ends. Glue and screw G between the two Fs. Fill the holes.

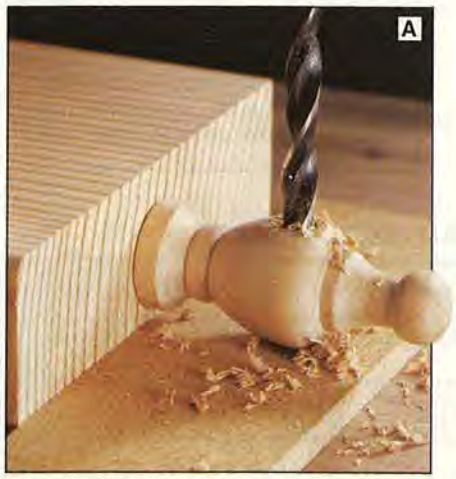
3 Cut the ridgeboard (H) to size bevel-cutting the edges at 20°.

4 Cut the roof slats (I) to size, bevel-ripping one surface at 6°. See Cutting the Roof Slats detail for reference. (To be safe, we used a pushstick when making this cut.)

5 Glue and nail the ridgeboard (H) and roof slats (I) to the roof assembly (F, G), keeping an equal overhang on each end. See the End Section View for reference.

6 Cut the roof top (J) to size. Then, rout a ¼" cove along all top edges. Mark the centerpoints, and drill the holes for mounting the finials.

7 Drill a ⅜" hole centered in the end of a scrap piece of 2×4. Fit the tenoned end of a finial into the hole. Place this on your drill-press table. Cut a spacer to fit snugly between the drill-press table and finial as shown in *photo A*. The spacer will keep the finial from flexing downward when drilling the hole in the side of the finial. Now, as shown in *photo A*, drill a



Support the finials when drilling the mounting holes for the dowels.

¼" hole ¼" deep into the outside finials, and drill a ¼" hole all the way through the middle finial.

8 Cut two 4¾" lengths of ¼" dowel stock. Glue the dowels into the finials, and then glue the finial/dowel assembly into the previously drilled ⅜" holes in the roof top (J). Wipe off any excess glue with a damp cloth.

A pair of stately columns come next

1 Cut two pieces of 1" dowel to length for the columns. Drill ¼" holes, centered in both ends of each.

2 Cut four pieces of ¼" dowel stock to 2" long each. Glue the dowels and wheels onto both ends of the columns. If the wheels have one dished side, orient this side down so they won't trap water on the finished feeder.

3 Glue the columns to the base assembly, once again orienting the dished side of the wheels down.

Paint the roof assembly so it will stand up to the weather

1 Mask the top of the roof assembly, leaving about ½" around the perimeter exposed. See *photo B* for reference. You'll need the unfinished wood to adhere the shingles to later.

2 Mask a ¾"-diameter area around the ¼" hole on the bottom side of the roof supports, allowing you an unfinished area to glue the top end of the column to later. Now, mask the mating area on each column top.

3 Prime and paint all the assemblies. We used an aerosol exterior primer and an aerosol white semigloss enamel.

Lay the shingles to keep the feed dry

1 To form the shingles (K,L,M,N), resaw or plane some of the cedar or redwood stock to 3/16" thick.

2 Rip 1⅝"-wide strips from the 3/16"-thick stock. Then, crosscut the shingles to the lengths listed in the Bill of Materials. You'll want to cut a few extra of each size.

3 Sand or cut matching chamfers on both bottom corners of each individual shingle.

4 Cut the ridge cap (O) to size.

5 Using a waterproof glue (we used a polyurethane adhesive), adhere the shingles to the roof assembly in the configuration shown on the Exploded View drawing and as shown in *photo B*. (As shown in the photo, we used a flat strip of wood with clamps to hold down a whole row of shingles at one time.)

6 When all the shingles are in position, glue and clamp the ridge cap (O) in place.

Complete the assembly, and fill it with feed

1 Cut the aluminum screen to 8×11". As shown in *photo C*, use a flat thin straightedge to bend over the edges of the screen for a final screen size of 7¼×10¼".

2 Turn the base assembly (A, B) upside down. Position the screen and screen support (C, D), and screw them in place. You might want to staple the screen in place to hold it stationary before adding the screen supports.

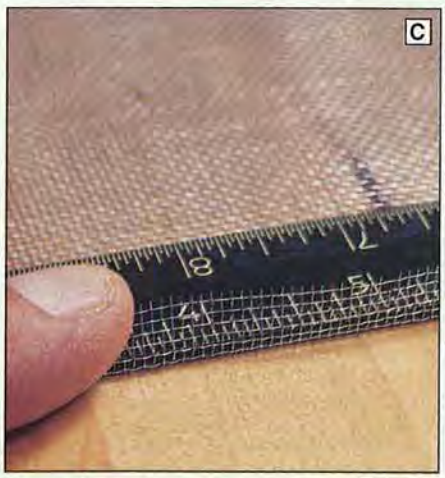
3 Next, position the base bottom (E), and screw it in place. Screw the pipe flange to the bottom of the base bottom.

4 Clamp the roof top/finial assembly in place, and drill countersunk mounting holes through G, H, and O and into J. Secure with screws.

5 Remove the masking, and glue the roof assembly to the tops of the columns. (As shown in *photo D*, we used spacers to support the roof when clamping it in place.)

Written by Marlen Kemmet
Project Design: ©Karl Derums, Pine Mountain, Georgia
Illustrations: Kim Downing
Photographs: William Hopkins, Sr.; Hetherington Photography

Use a waterproof glue when adhering the cedar shingles to the roof.



Use a thin straightedge when bending the edges of the screen.

Use four spacers to support the roof when gluing it to the two columns.

Project Showcase

Art center exhibits turnings in Oklahoma

Bob Hawks *Smoke in a Bottle*
Purpleheart and madrone, 12" tall, 7" dia.

Ron Fleming *Andora*
Mahogany, 15½" tall, 13" dia.

Larry Anderson *Untitled*
Spalted maple, 7" tall, 3" dia.

LET US SEE YOUR BEST WORK, TOO

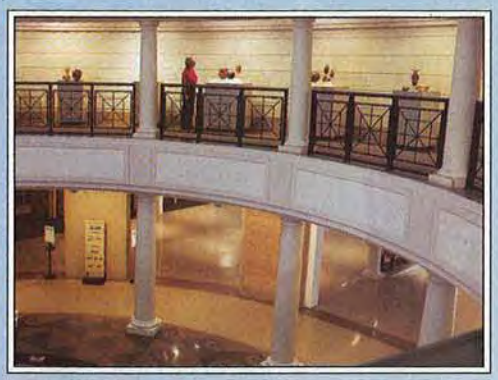
Show us your best original projects, except for decks or other home improvements. Items built from kits or directly from published plans are ineligible, as are carvings from commercial roughouts. To submit your original project for consideration:

- Send sharp color slides or glossy prints of the item. (We can't use Polaroid photos.) Photos, which are nonreturnable, should have plain, uncluttered backgrounds.
- Explain what the project is or what it does—we don't want to call your lamp table a plant stand. Describe its features, wood, finish, and overall dimensions.
- Tell us a little about yourself, too—how old you are, your occupation (or former one, if you're retired), how long you've been a woodworker, and so forth. Include a daytime phone number.
- Send everything to:

WOOD® Magazine
Project Showcase
1716 Locust St., GA310
Des Moines, IA
50309-3023

When we want to know what woodworkers are doing down in Oklahoma, we check in with our friend, photographer and ace woodworker Bob Hawks. Recently, Bob called to ask if we'd like to look at some photos of woodturnings on display in an Oklahoma museum (*far right*). Of course, we did.

The exhibition earlier this year at the Philbrook Art Center in Tulsa—the art center's first display of woodturnings—featured 35 pieces by 15 members of the Northeastern Oklahoma Woodturners Association. The group's 85 members submitted more than 240 items for jurying. Here are eight of our favorite turnings from the show.



Mike Horsman
War Shields Vase
Walnut and wenge, 15" tall, 12" dia.

Bill Sellers *Untitled*
Norfolk Island pine, walnut, and turquoise, 11½" tall, 10½" dia.

Bill Boggs *Untitled*
Walnut, 5" tall, 9½" tall

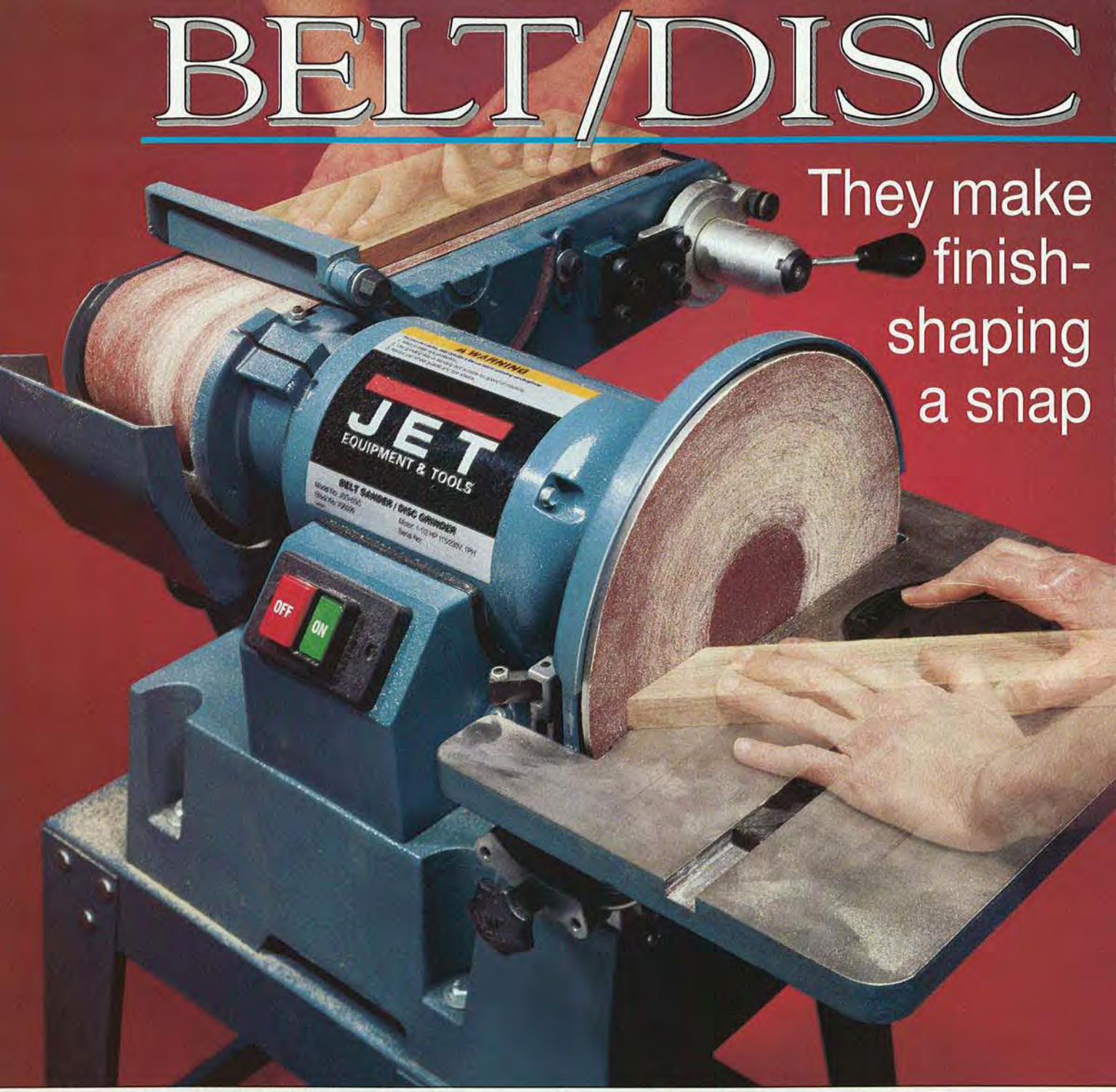
Marty Mumma *Untitled*
Sassafras, 4" tall, 8" dia.

Jim VanderLind
Untitled
Cocobolo and maple, 6½" tall, 3½" dia.

Sorry, but we are unable to provide plans, drawings, patterns, measurements, bills of materials, additional photographs, descriptions, or other details for projects shown. To protect their privacy, we can't reveal addresses or telephone numbers of Project Showcase exhibitors.

BELT/DISC

They make finish-shaping a snap



It's amazing how many times we turn to the belt/disc sander in the *WOOD*® magazine shop. We use it to hog away waste from rough-cut curves, remove saw marks, touch up miters, or shape perfect circles. And we think you'll find one of these sanding and shaping machines equally useful in your shop. So, read on as we put the wood to five 6×48" combination sanders to find out what you should look for before you buy.

Print this article

Fast facts

- A large disc helps you sand the ends of wide workpieces. And, because the speed of the disc increases as you approach its edge, a large disc also gives you a wide range of speeds.
- If you plan to use the belt for sanding and shaping inside curves, consider one of the models that offer easy access to the upper roller.
- These sanders generate lots of fine dust, the kind that seems to float endlessly in your shop's air. So, make dust collection a high priority when choosing a sander.

SANDERS Under $600

About our performance test

We began our evaluation as we always do: by assembling the machines and getting acquainted with the adjustments and features of each. While carefully inspecting each unit for fit and finish, we also looked closely at other key elements: type of bearings used, platen flatness, and dust-collection effectiveness.

To test each sander's ability to hold its power under a heavy load, we placed a weighted 6×12" pine board on the belt and observed any change in motor speed and belt tracking. We then sanded the end grain of the same board with the disc, and again observed any speed change. In both oak and pine, we sanded inside curves on the edge of the stock. We also shaped outside curves using both the disc and belt. To check each machine's dust-collecting capability, we tested them using both a shop vacuum and a 4" dust collector.

When sizing up a machine, remember that you use only the left side of the disc. So, the actual sanding capacity of a disc is just less than half its diameter.

How these sanders compare to benchtop units

All but one of the sanders we tested come with a floor stand or offer it as an option (see our chart on *page 65*. A floor stand enables you to move around the tool to make full use of all its features. But, a freestanding sander requires precious floor space, where a benchtop unit doesn't.

For removing a lot of stock quickly, these heavyweights all have 6×48" belts. So, you can sand face or end grain of stock up to 6" wide in just one pass. Their smaller benchtop brethren can handle only 4" stock in one pass.

Disc diameters on the units we tested range from 9" to 12", but remember, you'll be working with a little less than *half* of that diameter, see photo *above right*. This means that with a 9" disc, you can square up the ends of stock up to 4" wide. But, to touch up a 45° miter on that same piece of stock, you'd need a 12" disc. By comparison, a smaller benchtop model with a 6" disc can work a 2" (or less) workpiece at 45°.

Buckling down and changing belts

Before you can change sanding belts, you need to clear a path for the belt; any combination of guards, covers, and brackets may block the way. The belt of the Grizzly G1014Z is the easiest to get to, by turning out two knurled knobs to remove the upper roller guard. The Powermatic ranks a close second. Its lower roller guard must be removed, but it comes off by simply removing one screw. Every time we changed belts on the Delta, we had to loosen four hex-head screws to take off the workstop and a support bracket, and snap off the upper roller guard. The Delta is the only sander in our test that requires removal of the table or workstop to replace the belt.

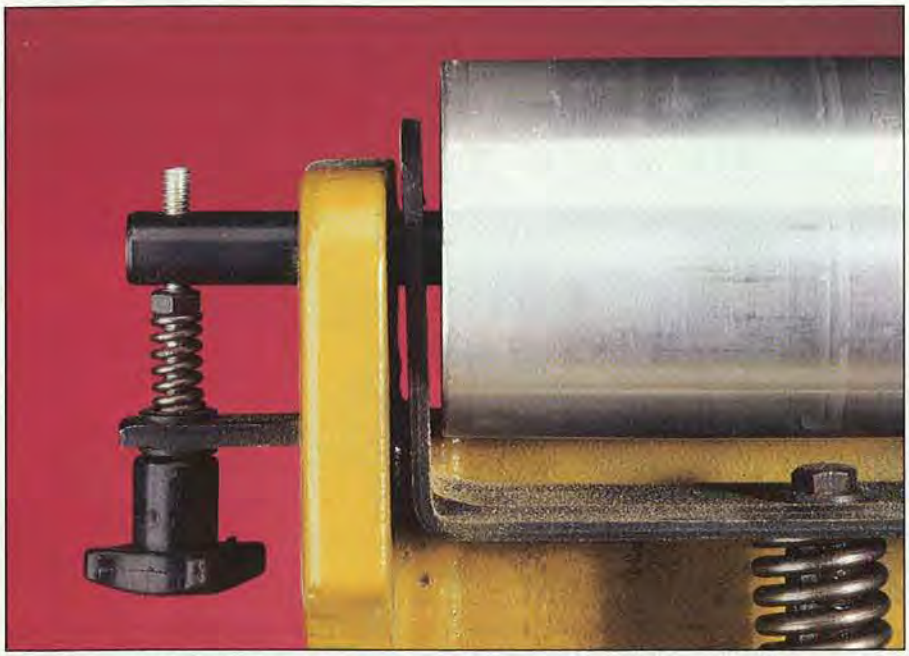
Once the way is cleared for belt takeoff, you must release the belt tension. Each sander has a quick-release lever that temporarily slackens the belt for removal. However, on the Grizzly G1014Z and the Jet, the mechanism doesn't lock in this position. We had to hold the lever in place, leaving only one hand to remove or install the belt—an awkward proposition.

Tension and tracking: keeping the belt in line

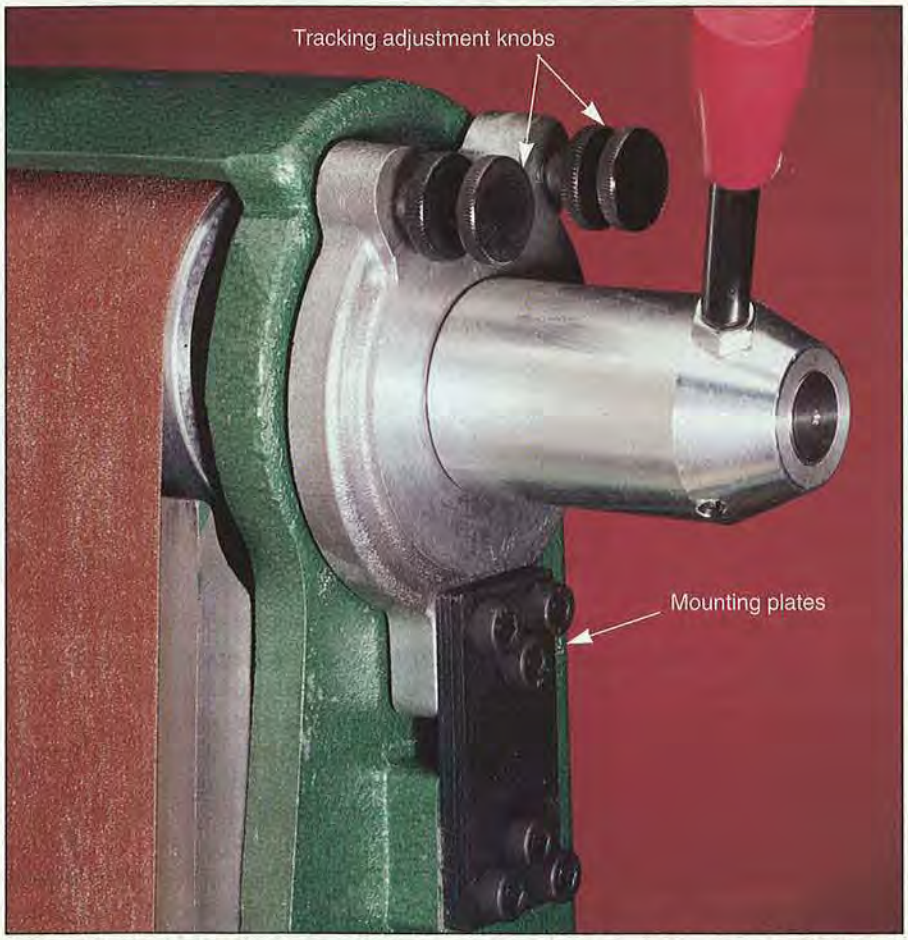
Belt tension sets automatically on most of the machines we tested, by means of a large spring on the upper roller mount. The only one that didn't set tension automatically—the Grizzly G1014Z—comes with detailed instructions and once set, shouldn't need to be adjusted for some time.

The tracking adjustment keeps the belt centered while it turns. When you adjust the tracking, you move the axis of the top roller into, or slightly out of, parallel with the bottom roller, to compensate for belts that may not be perfectly parallel. Once set, the

Continued



A single-point tracking mechanism: Turn the knob in, and the roller raises, tracking the belt to the right. Turn it out, and the belt tracks left.



A dual-point tracking adjustment system. After upgrading the mounting plates, we needed only one knob to adjust tracking.

tracking should need only minor adjustments until the next time you change belts.

Three of the sanders we tested use a single-point tracking mechanism as shown at *left*, which we found stable and simple to adjust. The Grizzly G1276 and Jet use two knobs, *bottom left*, to set tracking (as you loosen one, you must tighten the other). We found this arrangement cumbersome. In addition, these were the only sanders we tested that, despite our best efforts, would not hold their tracking when we sanded. In our initial tests, the upper rollers were mounted by means of three layered steel plates that provided enough flex for tracking adjustment. But in our tests, we found the three plates weren't stiff enough to keep the upper roller on the same plane as the lower roller. This caused the belt to "walk" when we applied our workpiece to it.

We installed additional steel mounting plates to both machines to see if we could sufficiently stiffen the assembly and keep the belt from wandering. With this accomplished, the tracking stabilized greatly. And, we found we could adjust the tracking using only one of the adjustment knobs. When contacted, officials at Grizzly agreed with our fix and said they would immediately begin shipping their sanders with five plates.

We also learned that Jet representatives had discovered the problem after the first production run (from which our sander came). After installing Jet's new upper roller assembly—including three beefier mounting plates—we found the tracking had indeed improved to an acceptable level.

Sanding curves on a belt/disc sander

After rough-cutting a curve with your bandsaw, you need to clean

The graphite pads developed a groove (dark band on pad) at worktable height after radius-sanding on the belt.

The Powermatic's stamped wrench (shown on bolt) fits poorly, making an already tricky task even more difficult.

it up, and a belt/disc sander handles the job well. Most of the models we tested tackle both inside and outside curves with few modifications.

We sanded inside curves freehand by removing the guard on the upper roller and feeding our workpiece straight into the roller. We found the guards on the Delta and the Grizzly G1014Z the easiest to remove. The Delta's guard simply snaps off by hand, and the Grizzly has only a pair of thumbscrews securing the guard. Because the Grizzly G1276's roller guard is an integral part of the cast belt arm, we could not remove it to sand inside curves. Also, sanding a curve on the upper roller of the Jet proved difficult—the belt would not maintain its tracking.

You can shape outside (radius) curves on either the belt or disc. However, we don't recommend using the belt on the machines with a graphite pad on the platen (see our chart on *page 65*). Manufacturers use the graphite to reduce friction, noise, and heat buildup, and the pads work fine for sanding broad or long surfaces. But, when sanding edges on a radius, we were surprised at how quickly and easily grooves developed in the pads, as seen *above*. Such a groove diminishes your ability to sand flat.

For smoothing the face or long edges of a workpiece, turn the belt arm horizontal; for working end grain, vertical. Or, you may be more comfortable working at some other angle. All of the models we tested rotate the full 90° and lock at any angle in between. Most of the belt arms are easy to reposition and lock into place with included tools. However, rotating the belt arm on the Powermatic is a nuisance. Its belt guard and pulley, shown *above*, hinder access to the arm's retaining bolts.

More things to consider before you buy

•**Dust collection.** Most of the machines in our test have ports sized to fit a shop vacuum hose (only the Jet has a 4" port). Most also use a single dust port to collect from both the belt and disc. But, we were surprised that neither of the Grizzly machines came equipped to catch dust generated at the disc. In spite of that (and its odd-sized 2" port), the Grizzly G1014Z earned high marks for its simple, yet very effective, belt dust collection. Powermatic uses two separate dust ports, which requires moving your dust hose back and forth from belt to disc. Though Powermatic's collection at the disc rates among the best, we found collection from the belt

Continued

largely restricted by the roller housing. Delta proved itself the best of the dust bunch, with one 2½" dust port and a built-in blast gate to divert the suction fully to the disc. With the gate closed, the collector catches nearly 100 percent of the dust from the disc.

•**Worktables.** The worktables on all of the machines felt good and rotated easily for sanding bevels and miters. Some machines include one worktable that can be used at both the belt and the disc. Others have separate tables for each. And, some include a workstop to keep flat stock from flying off the end of the belt when sanding. If you'll be moving work back and forth between the disc and the belt, get a machine with separate tables to save yourself a lot of resetting. Check our chart at *right* to see what comes with each machine.

•**Power and speed.** The five sanders in our test display ample power for most sanding chores. Only the Grizzly G1276 slowed significantly under load, and only when sanding heavily at the rim of its big 12" disc.

Belt speed proved acceptable on all of the machines: slow enough to prevent burning the wood, yet fast enough to remove stock quickly. Disc speed is less critical—just remember that a 12" disc gives you a wider range of speeds. If you find your workpiece burning while you sand, move it closer to the center, where the disc moves slower.

•**Ease of maintenance.** Aside from changing belts, only the roller bearings will require maintenance. Most of the combination sanders in our test use shielded bearings that will eventually need to be replaced due to their exposure to fine sanding dust. The Jet and Delta sanders use sealed bearings, which we prefer, to keep the bearings dust-free.

When the dust settles, what would we buy?

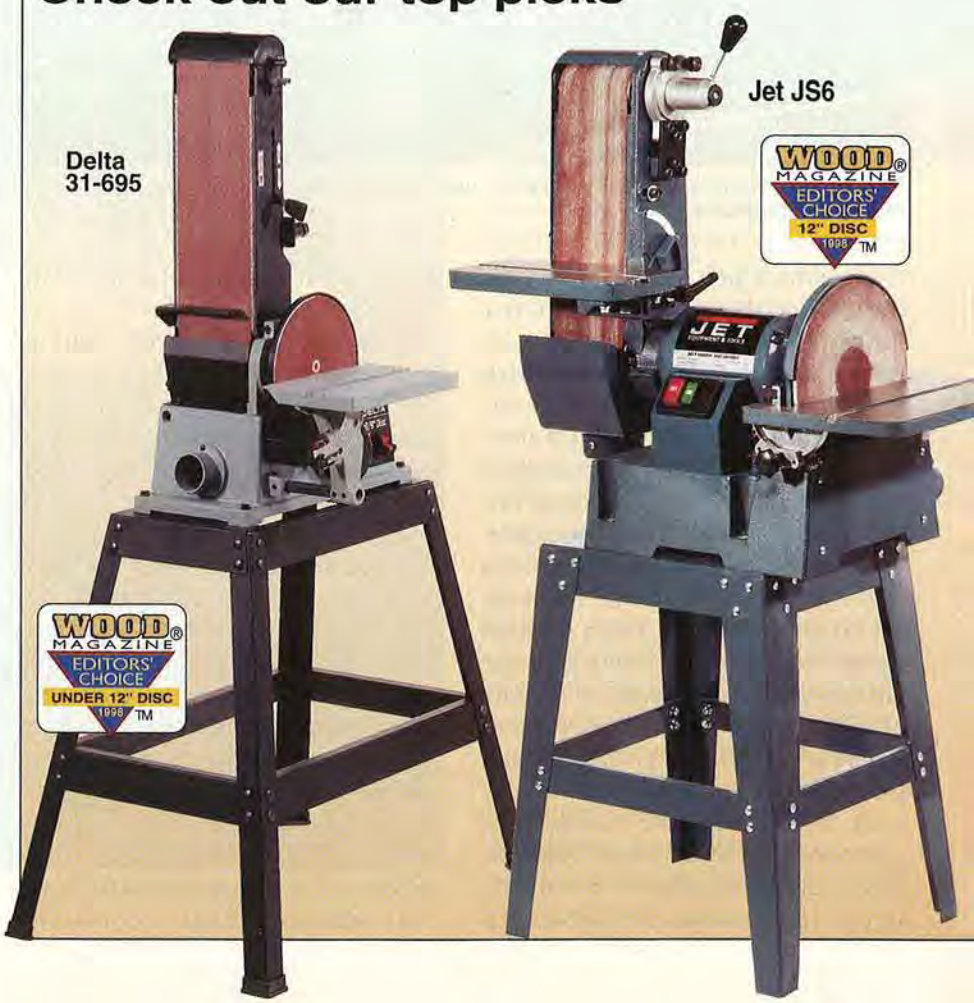
With prices from $170 to $599, you can spend as much—or as little—as you want, but there are trade-offs for the lower prices. Among sanders with 12" discs, the Jet JS6 edges out the Grizzly G1276 by virtue of its extra power and superior dust-collecting ability. But, the Grizzly costs $160 less. In the middle of the price range, the Delta 31-695 performed as well as or better than most sanders in the test. But, instead of a cast-iron platen, you get stamped steel that's more prone to warping or a ding from a dropped tool. Though the Grizzly G1014Z doesn't have dust collection at the disc, it's a solid machine with the longest belt platen—and the lowest price.

MANUFACTURER/ IMPORTER	MODEL	MOTOR HORSEPOWER	MOTOR VOLTAGE	MOTOR DRIVE-TYPE (1)	DISC DIAMETER (INCHES)	DISC SPEED (RPM)	
DELTA	31-695	1	110	B	9	2800	
GRIZZLY	G1276	1	110/220	D	12	1725	
	G1014Z	¾	110/220	B	9	2900	
JET	JS6-6DC	1½	110/220	D	12	1725	
POWERMATIC	84	¾	110/220	B*	10	2100	

NOTES:

1. (B) Belt drive
   (B*) Two drive belts
   (D) Direct drive
2. (DT) Disc table can be moved to be used with belt.
3. (CI) Cast-iron
   (G) Graphite pad on platen
   (SS) Stamped steel

Check out our top picks



HOW THEY CUT IT: 6 x 48" COMBINATION SANDERS UNDER $600

	TABLE SIZE (WxL, IN INCHES)	SPEED (FEET PER MINUTE)	BELT: PLATEN SIZE (INCHES)	BELT: TABLE SIZE (2) (WxL, IN INCHES)	BELT: PLATEN MATERIAL (3)	CONSTRUCTION: MAIN HOUSING (4)	CONSTRUCTION: TABLE MATERIAL (4)	CONSTRUCTION: ROLLER BEARINGS (5)	CONSTRUCTION: DUST PORT SIZE (INCHES)	PERFORMANCE RATINGS (6): BELT CHANGING	BELT TENSIONING	BELT TRACKING	EASE OF BELT ARM ROTATION	DISC RUNOUT	POWER UNDER LOAD	DUST COLLECTION	FIT AND FINISH	STANDARD ACCESSORIES (7)	OPTIONAL ACCESSORIES (7)	WARRANTY	COUNTRY OF ASSEMBLY (8)	WEIGHT (POUNDS)	SELLING PRICE (9)	COMMENTS
	7x11¾	2200	15¼	DT	SS/G	CI	AL	SL	2½	G	E	E	E	E	E	E	E	FS, WS	EF, FL, M	2 yrs.	T	79	$299	A well-built machine at a reasonable price.
	7x16½	2500	14⅝	7x12½	CI	AL	CI	SH	3	F	G	E	G	E	G	F	G	M		1 yr.	T	155	439*	Benchtop use only; floor stand not available.
	6x12¼	2300	16⅞	DT	CI/G	CI	CI	SH	2	E	G	E	F	E	E	F	F	FS, WS	MB	1 yr.	T	120	170*	Not pretty or sophisticated, but for the money, it does the job.
	9x16½	2500	14¾	7¼x14½	CI/G	AL	CI	SL	4	F	G	G	G	E	E	G	E	WS, M	FS	2 yrs.	T	150	599	The most powerful machine in our test.
	6½x13	1650	16⅞	6x10½	CI	CI	CI	SH	2½	G	E	E	P	E	E	G	G		FS, MB	1 yr.	T	125	445	Belt arm rotation was difficult.

4. (A) Aluminum
(CI) Cast-iron

5. (SH) Shielded
(SL) Sealed

6. E Excellent
G Good
F Fair
P Poor

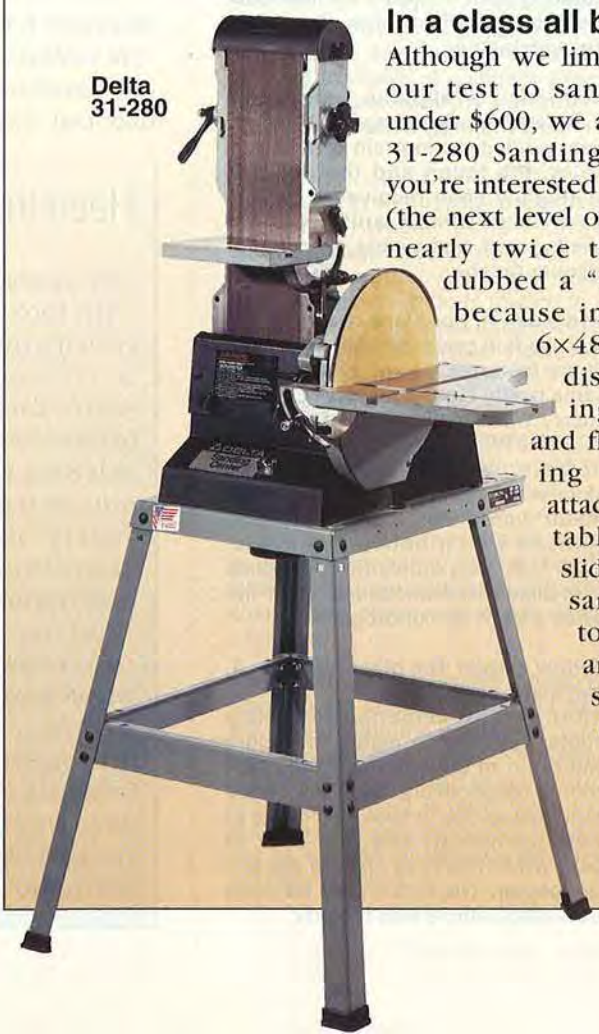
7. (EF) Edge-sanding fence
(FL) Flexible shaft
(FS) Floor stand
(M) Miter gauge
(MB) Mobile base
(WS) Work stop

8. (T) Taiwan

9. Prices current at time of article's production and may change.
*Shipping charges additional

Where to call for more information:

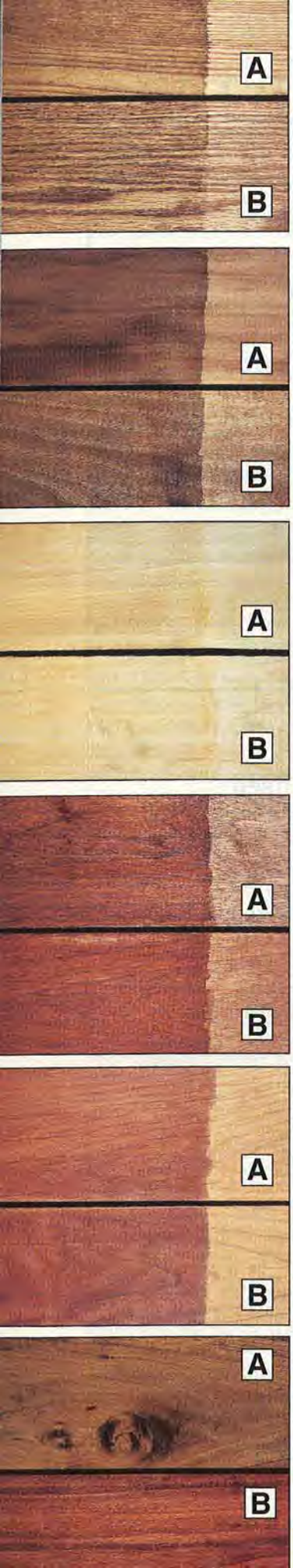
Delta 800/438-2486
Jet 800/274-6848
Grizzly 800/523-4777
Powermatic 800/248-0144



In a class all by itself

Although we limited the scope of our test to sanders selling for under $600, we also tested Delta's 31-280 Sanding Center in case you're interested in spending $800 (the next level of sanders starts at nearly twice that price). It's dubbed a "sanding center" because in addition to its 6×48" belt and 12" disc, it offers buffing, drum-, flap-, and flexible-shaft sanding with optional attachments. The disc table comes with a sliding pivot pin for sanding circles up to 24" in diameter; an optional extension stretches that capacity to 48".

Written by Dave Campbell
Technical consultant:
Dave Henderson
Photographs: Marty Baldwin
Illustrations: Kim Downing



Sometimes, only an expert WOOD LOOK-

White ash, A, for red oak, B
The two wood samples were stained with a diluted Dark Golden Oak water-soluble aniline dye, but first the red oak was sealed with thinned shellac so it wouldn't darken too much. The white ash received a second coat to further enhance the grain. The samples each got a sealer coat of thinned shellac and a finish coat of spray lacquer.

Red gum, A, for black walnut, B
The red gum board was selected for its nearly perfect walnut coloration. It and the walnut sample were dyed with a Medium Walnut water-soluble aniline dye, then sealed with shellac to warm up the color. The finish coat was spray lacquer. Note the color and grain similarity of the naturally finished samples in the right side of the photographs.

Yellow birch, A, for maple, B
Chosen for its lighter color, the yellow birch was almost a perfect look-alike for sugar maple even before staining with a highly diluted Dark Golden Oak aniline dye and finishing with lacquer.

Red lauan (Philippine mahogany), A, for Honduras mahogany, B
Nearly identical in grain and natural color, the lauan and the genuine mahogany each received a coat of Dark Wine Cherry aniline dye, a shellac coat, and a clear, spray-lacquer finish.

Red alder, A, for black cherry, B
With its fine grain, pinkish color, and figure features, the red alder sample came pretty close to matching black cherry when each received one coat of Dark Wine Cherry aniline dye. However, by first sealing the red alder with shellac, then dyeing it, the result was even closer. Each was sprayed with a finish coat of lacquer. Note how much the two woods look alike in the unstained, clear-finished part of the photographs.

Yellow poplar for black walnut, A, and black cherry, B
After careful selection of yellow poplar samples to match the figure and grain of black walnut and black cherry respectively, each was dyed with aniline dye. It took two coats of Medium Walnut and one coat of Dark Wine Cherry to change the yellow poplar. The finish coat for each look-alike sample was lacquer.

Print this article

Caught short of stock for your project? Want to save some bucks on wood? Can't find the wood you need for a missing part? Professional woodworkers, furniture restorers, and furniture manufacturers have long known the value of look-alikes—often less expensive woods that they can stain and finish to resemble more costly ones. If you're looking for a few good stand-ins, you've come to the right place.

Knowledgeable furniture restorers sometimes face a piece needing repair that's made from chestnut, once a widely available furniture wood. No chestnut, no problem. They'll replicate a part from sassafras, abundant throughout the South, then finish the wood to match. Savvy finishers also know that they can make white ash pass for red oak if need be.

In Colonial times, furnituremakers frequently substituted native black cherry for the popular but expensive Honduras mahogany then

Heed these pointers for the pretenders

If you decide to do some woodworking with look-alike woods, you'll have more success if you keep the following in mind:

- You can often substitute a look-alike wood for more than one wood species, such as alder for walnut or cherry, red gum for walnut or mahogany, and yellow poplar for a variety of woods. This has been a common manufacturing practice in moderately priced furniture for over 50 years.

- Remember, all wood falls into three basic wood-grain categories: coarse-grained, such as oak and ash; medium-grained, like mahogany and walnut; and fine-grained, as found in cherry, maple, and yellow poplar. Because it's nearly impossible to make wood with one type of grain look like one with another type, select a look-alike wood

can tell the difference
ALIKES

in vogue. Today, though, black cherry outpaces mahogany in the public's preference for furniture, so the look-alike role it once played no longer makes sense.

Furniture factories also commonly follow wood-substitution practices, turning to species such as alder, hackberry, soft maple, and selected imported woods for frames, legs, trim, and other secondary parts. Extensive staining, sealing, glazing, and toning techniques finish these species so that they look the same as the cherry, mahogany, or walnut used on the major parts.

To demonstrate what happens when you substitute one wood for another, we prepared samples of several common woods (read about our selected species at *right*). The wood samples were then stained (we used water-soluble aniline dyes) and clear-finished with lacquer to resemble other often more expensive woods, as shown in the photographs *far left*. The captions by each pair of photos label the woods and tell you what we used to get the color match. As you can see, some of the look-alike woods play their role better than others.

with the same general grain features as the one you want to imitate.

- In most cases involving the substitution of wood, you'll have to stain or dye the look-alike wood. That may require some tinting and experimentation before you get the color of the imitator exactly right.

- If you plan to mix a wood and its look-alike in the same project, such as walnut and red gum, you should stain or dye both woods. If the look-alike wood is lighter in color, use two coats of color to darken it, but only one coat on the wood being imitated. As we found out in one instance, the darker, more coarse-grained wood of the two species should get a sealer coat of thinned shellac before coloring so that it won't continually get darker.

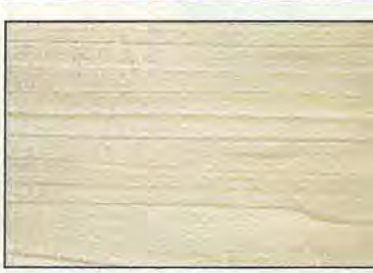
Read more about our look-alikes

Red gum (*Liquidambar styraciflua*). About two-thirds the cost of black walnut, red gum comes from the heartwood of the large sweet gum tree. The lighter-colored sapwood of the same tree is marketed as sap gum. A little lighter in weight and a bit less dense than black walnut, red gum has grain, figure, and natural color similar to much of the more expensive wood. However, it's not as hard or as strong.

Red alder (*Alnus rubra*). Because it takes stains and finishes so well, red alder can substitute for several woods. Although red alder is lighter than cherry, for instance, but almost as strong, furniture manufacturers frequently use it at barely half the cost of pricey fine cherry.

White ash (*Fraxinus americana*). Similar in weight, hardness, strength, and grain appearance (when both are flat-sawn) to red oak, but available at a slightly lower price. Compensate for its lack of pinkish hue with a warmer stain.

Yellow birch (*Betula alleghaniensis*). In all physical properties except hardness, yellow birch matches sugar maple quite well. It also has fine grain. Although yellow birch's heartwood tends toward tan, board sorting can yield lighter wood that will pass for maple. However, there's little cost savings—both are priced about the same.



Yellow poplar (*Liriodendron tulipifera*). You'll find this wood no match for what you might want it to imitate in weight, strength, or hardness, but it is dense and fine-grained. And yellow poplar readily takes stain to substitute for maple, cherry, and other woods, but costs a lot less.

Red lauan (*Shorea negrosensis*). At about a third less than the cost of genuine mahogany, look-alike lauan (also called Philippine mahogany) substitutes with little effort. Lauan isn't as hard, strong, or stable as the real thing, though, and not as easy to machine as the classic cabinet wood.

Written by Peter J. Stephano Photographs: John F. Schultz

THE ULTIMATE Rainy-Day Project

Finely detailed yet surprisingly simple to build, this rendition of Noah's Ark is sure to become an instant family favorite and a treasure for generations to come.

Noah knew to start with the hull; let's do that, too

1 Cut four hull layers (A) and the deck layer (B) to the sizes shown in the Bill of Materials. Laminate them with the mahogany deck layer on top of the stack.

2 Photocopy the Full-Size Side View and Top View Patterns in the *WOOD PATTERNS®* insert in the middle of the magazine. With rubber cement or spray adhesive, adhere the patterns to the lamination, taking care to align the ends on both views.

3 Referring to the Cutting the Hull and Cabin Base drawing, bandsaw along the deck line on the side view (Step 1). Reattach the waste piece with two 4d finish nails, driven inside the cabin-base outline. Don't drive them all the way in, so you can pull them out. (Later, the nails and holes will index the cabin location on the hull.)

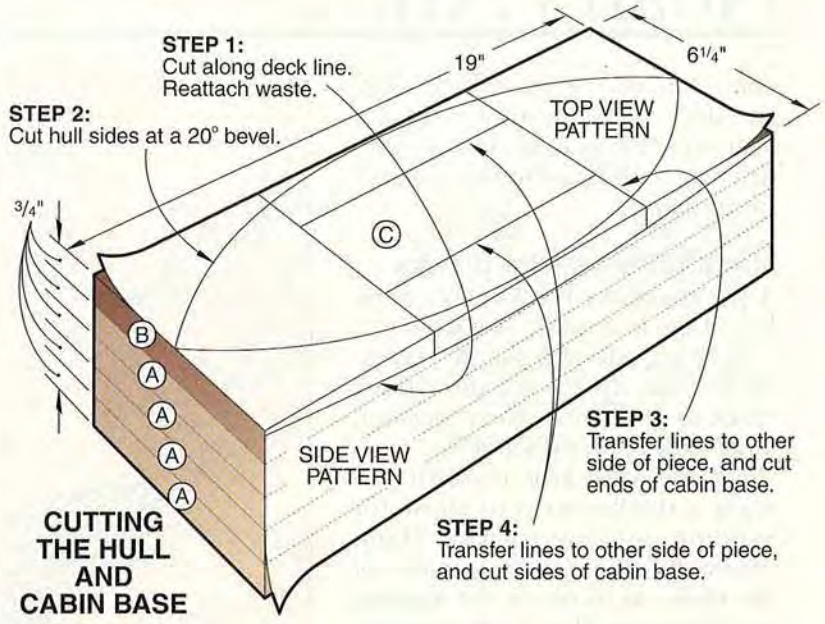
4 Tilt your bandsaw's table to 20°. Saw around the hull outline on the top view (Step 2), as shown *right*. Remove the deck waste piece from the hull, and return the saw table to level.

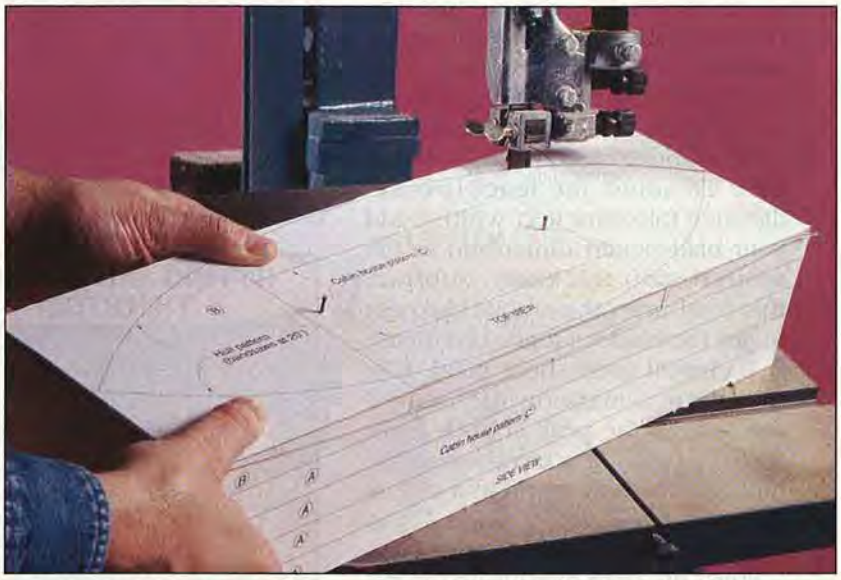
5 Saw the cabin base (C) from the deck waste. To do this, transfer the lines marking the ends of the cabin base to the bottom of the piece (drawing Step 3). Then, with the flat, patterned side down, cut the ends, as shown *right*. Similarly, cut the sides of the cabin base where shown (Step 4).

6 Temporarily reattach the cabin base to the deck with the two nails. Sand the deck smooth, then remove the cabin base. (Placing the cabin base on the deck while sanding prevents you from sanding that portion of the deck, which could change the fit between the two parts.) Leave the nails in their holes in the base, but cut them off flush with the top of part C.

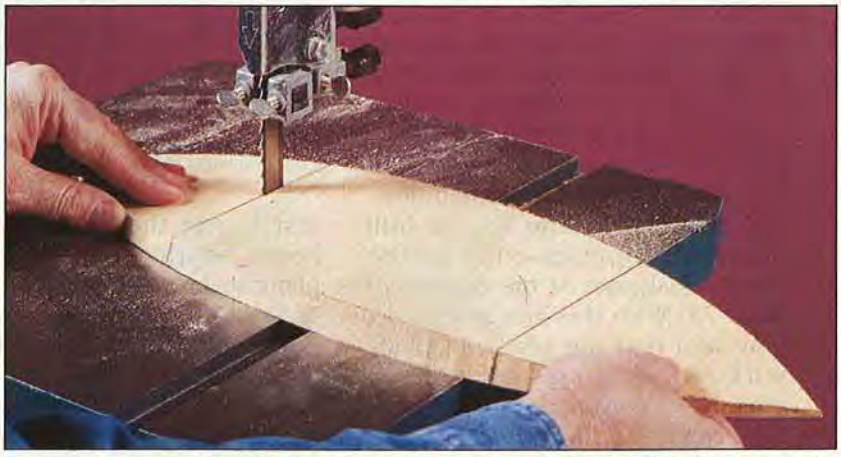
7 To draw lines representing deck planking, make the jig shown in the Decking Guide drawing in the *WOOD PATTERNS* insert. Mark a

Continued





Bandsaw the hull outline with the bandsaw table tilted to 20°. The piece cut off in the first step has been nailed back onto the block.



Transfer cabin end lines from the pattern on the other side to the bottom of the deck waste so you can place the flat surface on the bandsaw table.

centerline on the deck, then draw the deck planks with a not-quite sharp no. 2 pencil, as shown *right*. After penciling in the lines, woodburn them.

Rip and resaw the planks

1 Cut the sheer planks (D) for the top of the hull to the size shown.

Here's a safe and simple way to do it: First, rip a piece of ¾"-thick stock to 1 1/16" wide. Next, position your tablesaw's rip fence 9/16" from the blade (or a little closer if you want a thicker strip to allow for sanding out saw marks). Then, resaw the plank on the outside of the blade, as shown in the Ripping and Resawing Thin Stock drawing. Set the fence ⅜" from the blade to resaw another plank. Sand them smooth on both sides. Use a feather board and pushstick to keep your fingers far from the blade.

(The above assumes a ⅛" blade kerf. To adjust the fence-to-blade distance for other kerf widths, add your blade's kerf dimension to the desired strip thickness. Subtract this total from the stock thickness to get the blade-to-fence distance.)

2 To install each sheer plank (D), first draw a mark on the hull ¼" down from the peak at both ends. Screw a piece of scrapwood to the hull bottom, and grip it in a vise as shown *at the top of page 72* to make the hull planking easier.

Enlist the help of your first mate, and lay the sheer plank along the hull side, bending it to align the ends with the marks on the hull. (Seamen refer to the curve formed along the plank's top edge as the *sheer line*. A boat's beauty is often judged on the grace of this line.) Hold the plank in place, and check for gaps between it and the hull.

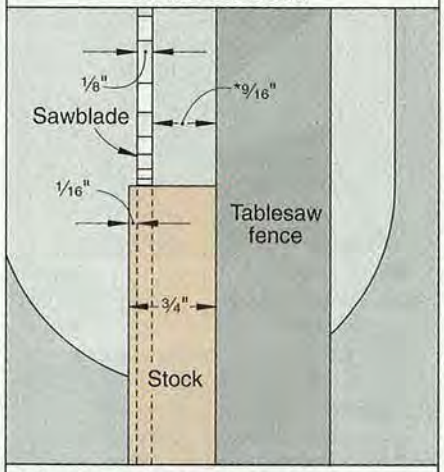
Then, draw a line on the hull along the bottom edge of the plank, as shown *at the bottom of page 72*. With this line as a guide, glue and nail the plank in place with #18×½" brass escutcheon pins, as shown *at the top of page 72*. Place the pins ¼" from the bottom of the plank on 2" centers starting at the middle. Predrill holes for the pins through the plank to prevent splitting. Use one of the brass escutcheon pins with the head cut off as your drill bit.

3 Saw the hull planks (E) by ripping 1/16"-thick strips from the edge of ⅜"-thick material, following a procedure similar to the resawing

Continued

Draw lines for the deck planks all the way to the center line.

RIPPING AND RESAWING THIN STOCK



*Dimension 3/16" less for each subsequent cut, allowing ⅛" for blade kerf.

Bill of Materials

Part	Rough Size T	W	L	Matl.	Qty.
A hull layer	¾"	6¼"	19"	P	4
B deck layer	¾"	6¼"	19"	MG	1
C cabin base*	1 1/16"	2½"	7½"	MG	1
D sheer plank	1/16"	1 1/16"	24"	MG	2
E plank	1/16"	⅜"	24"	MG	18
F stem cap	⅛"	¼"	5½"	MG	2
G cabin layer	¾"	2½"	7½"	MG	2
H cabin trim	3/32"	¼"	12"	MP	2
I cabin siding	1/16"	¼"	16"	MP	8
J porthole	¾" dia.		⅛"	MD	2
K roof board	⅛"	⅜"	9"	MG	8

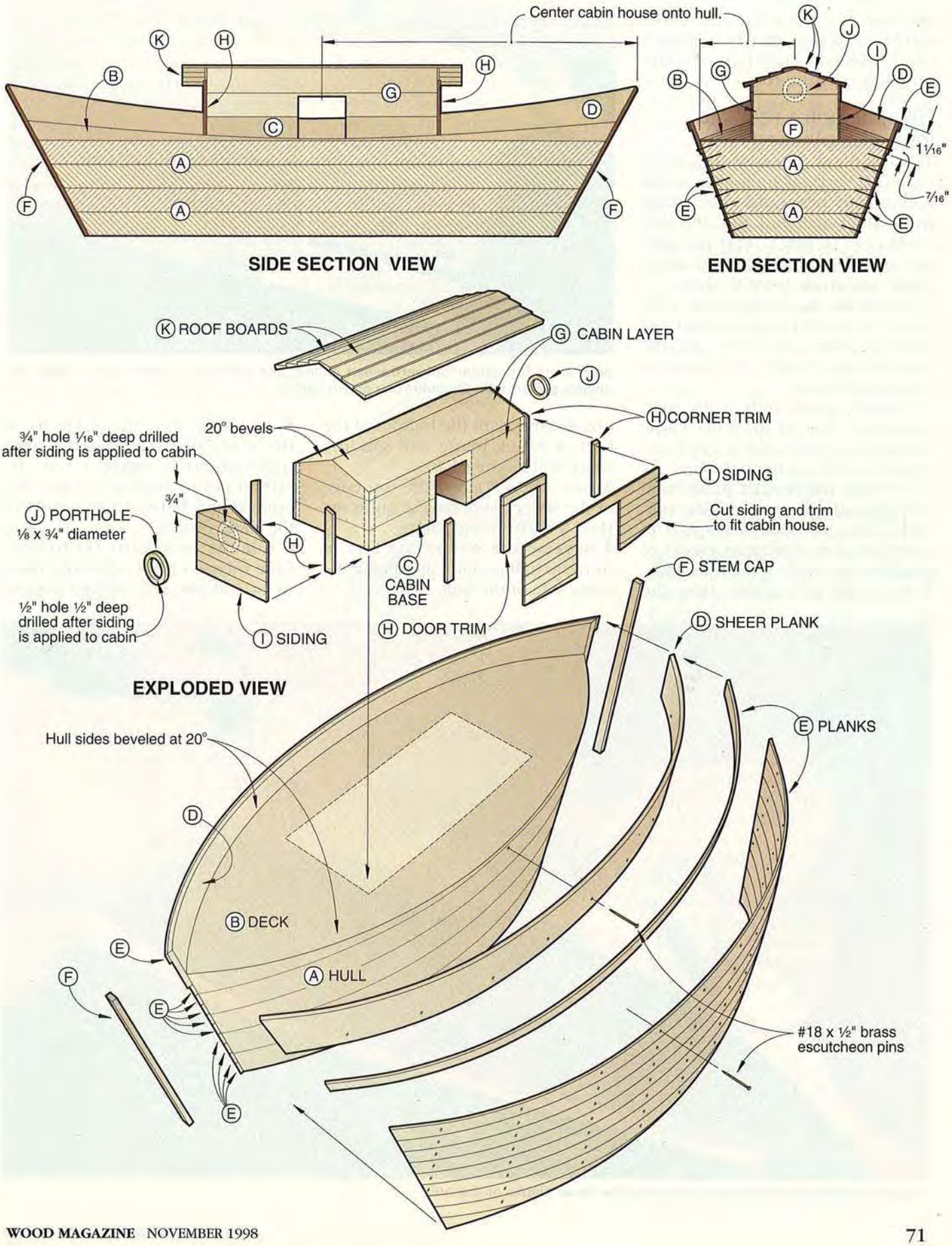
*Cut from deck waste; see text.

Materials Key: MD–maple dowel rod, MG–mahogany, MP–maple, P–pine

Supplies: woodworker's glue, #18×½" brass escutcheon pins, clear finish.

Buying Guide

Ark animals. Set of animals for ark (6 pair), $30.00 ppd. in U.S. Other animals also available from open stock. Roesner's Miniature Menagerie, 824 S. Oakwood Ave., Geneseo, IL 61254-1838. Call 888/818-6450, fax 309/944-6545, E-mail orders, gladys@mini-figurines.com. See online catalog at http://www.mini-figurines.com.


Center cabin house onto hull.
K
H
B
G
C
D
A
F
SIDE SECTION VIEW
J
I
E
1 1/16"
7/16"
END SECTION VIEW
K ROOF BOARDS
G CABIN LAYER
J
H CORNER TRIM
20° bevels
3/4" hole 1/16" deep drilled after siding is applied to cabin
3/4"
I SIDING
Cut siding and trim to fit cabin house.
J PORTHOLE
1/8 x 3/4" diameter
C CABIN BASE
F STEM CAP
1/2" hole 1/2" deep drilled after siding is applied to cabin
H DOOR TRIM
D SHEER PLANK
EXPLODED VIEW
E PLANKS
Hull sides beveled at 20°
B DECK
A HULL
#18 x 1/2" brass escutcheon pins

method you used for the sheer planks. Sand the outer face of each plank before installation, slightly rounding over the edges.

Give the hull a realistic look with planked sides

1 Now, plank the hull. Begin by drawing vertical lines down the hull directly below the sheer-plank nails. Then, nail and glue the hull planks (E) in place. Butt the first one against the bottom of the sheer plank, and work down the hull.

Nail from the center out with brass escutcheon pins, aligning them with the ones above and the lines below. Predrill the planks to prevent splitting.

Trim the plank ends at the stem and stern. (We cut them off with a Japanese Dozuki saw.) Tape the trimmed ends tightly to the hull.

The last full-length plank will bow past the bottom of the hull. That's OK; just nail and tape it in place for now. Cut short pieces of plank for the ends of the hull side.

2 After the glue dries, trim the planks flush with the bottom of the hull. A block plane and sanding block will do the trick.

Work from the center outward when nailing and gluing the sheer plank. Align the plank's bottom with the guide line drawn earlier.

3 Glue a plank along the top edge of the sheer plank for the gunwale. Hold it with spring clamps.

4 Reverse the scrapwood arm to turn the hull around, and plank the other side of the hull.

5 Sand the ends of the planks flat at the stem and stern. A flat area that's about ¼" wide is fine. Be careful not to sand so far that you open a gap between the ends of the sheer planks.

6 Cut the stem caps (F) to size. Glue them in place, allowing them to extend past the top and bottom

A helper comes in handy when positioning the sheer planks on the hull.

of the hull. Tape or tack them in place until the glue dries. Then, trim them flush at the top and bottom. At the top, trim them to follow the sheer line. (We used the Dozuki, again.)

7 Sand the stem caps to a sharp edge, flush with the hull. Sand the gunwales first, then tape or otherwise protect them while you sand the lower part of the hull.

Construct a cozy cabin

1 Cut the two cabin layers (G) to size. Referring to the Cabin drawing, glue them to the top of the cabin base (C). Keep the edges and ends flush.

2 After the glue dries, lay out and cut the roof bevels on the cabin top. (We bandsawed the bevels.) Bandsaw the notch for the door where shown.

3 Cut the cabin trim (H) and siding (I) to the dimensions shown.

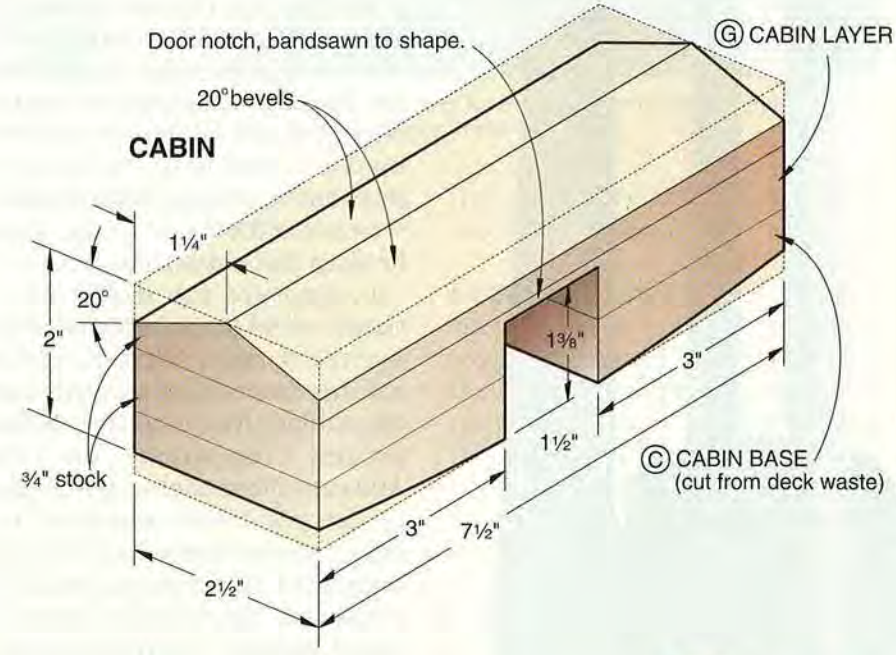
4 Begin siding the cabin by gluing trim pieces around the door opening on each side. Cut vertical pieces to fit along the door sides, flush with the top of the opening. Then, fit a piece across the top.

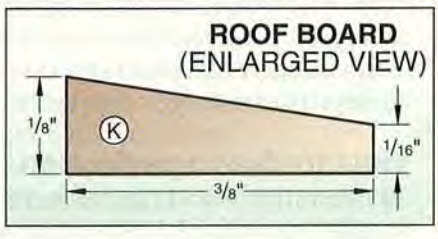
5 Draw a line ¼" from each end on both sides of the cabin. Then, starting from the top, glue on cabin siding between the door trim and the lines. After all the siding is in place, hand-plane and sand the boards flush with the cabin base. Be careful not to change the base contour.

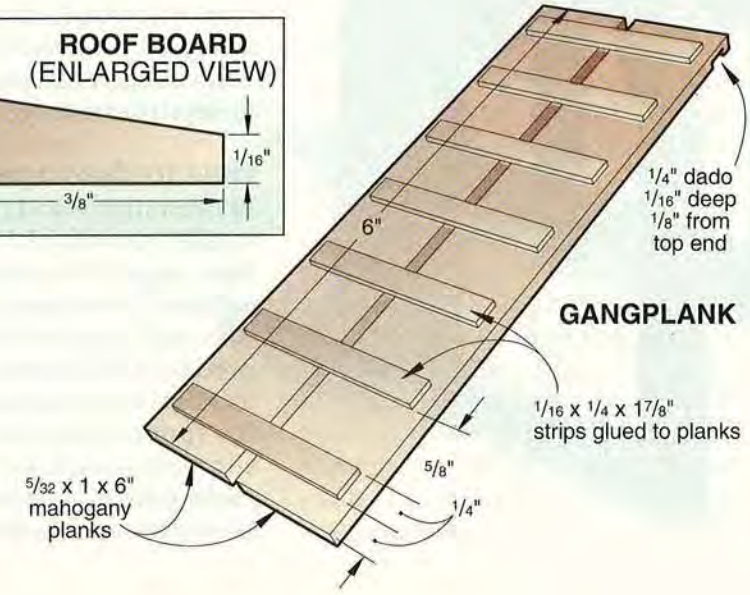
6 Glue trim pieces onto the cabin corners. Place the trim on the sides first, then apply the end pieces. Plane or sand the tops of the trim pieces to match the roof bevel.

7 Trim and install the siding on the cabin ends. Align the boards across the ends with those on the sides for an orderly look.

8 Bore a ¾" hole 1/16" deep into each end of the cabin where shown. Glue a ⅛" length of ¾" dowel (J) into each hole. Bore a ½" hole ½" deep into the center of each dowel after the glue dries.







Put on a rain-tight roof for a comfortable voyage

1 Saw the beveled roof boards (K) to the profile shown in the Roof Board drawing. To do so, plane or sand a bevel on one edge of ⅜"-thick stock. Rip the beveled edge off, using the sawing technique employed for the hull planks. True the sawn edge of the stock, bevel it, and saw the next board.

2 Glue the boards to the roof, starting at the ridge. Lay the unbeveled side against the roof, with the thick edge toward the outside. Plane or sand a bevel on the thin edge of each board for a better fit when you butt the boards together. Equalize the overhang at the edges of the cabin.

3 Glue the cabin to the deck. Clamp it with large rubber bands around the cabin and hull.

4 Finish the ark with semigloss lacquer. We sprayed on three coats from an aerosol can, buffing between coats with a white Scotch Brite pad.

5 To make it easier for the animals to get on and off your ark, build a gangplank, as shown in the Gangplank drawing.

Project Design: Wayne Edwards; James R. Downing
Photographs: Hetherington Photography; Baldwin Photography
Illustrations: Kim Downing; Lorna Johnson

An Arts & Crafts

At Mountain Springs Woodcraft, aniline dye and lacquer replace turn-of-the-century fuming and shellac for the mission look

Water-soluble aniline dyes give the white oak in these mission-style pieces a deep, rich color and clarity to highlight the grain.

Judy Schmitt designed this taboret table that shows off the rays and flecks of its quartersawn oak.

See related article on page 49

Gustav Stickley's original Arts and Crafts, or mission, furniture of quartersawn white oak was fumed to a dark brown. That's a process which involves ammonia fumes reacting with the wood's high tannic acid content in a sealed chamber. "This process is the only one known that acts upon the glassy pith rays as well as the softer parts of the wood, coloring all together in an even tone so that the figure is marked only by its difference in texture," Stickley wrote.

The fuming process, however, proves extremely dangerous—ammonia is harmful if its fumes are inhaled or it comes in contact with the skin. And the shellac used as a final finish on Stickley's mission furniture, while it added warmth to the wood's tone, won't hold up like today's finishes.

To capture the dark look of Gustav Stickley's furniture without the danger, Michael Schmitt and his family turn to water-soluble aniline dyes. And the mission pieces they create on their Arkansas mountaintop would turn Stickley's head—each with a deep, warm clarity of color that highlights the rays and flecks of the wood. Careful applications of toned lacquer contribute protection and smoothness. But the Schmitts' success also comes from dedication in preparation and an in-depth knowledge of materials.

How to dye to perfection

Because the wood has been thoroughly smoothed before glue-up (see *page 53*), the aniline dye solution (five parts hot water to one part dye, with the dye first predissolved in a bit of denatured alcohol) raises the grain little after it's applied. And the staining with the first base coat, such as the "light fumed" aniline noted on the next page, goes quickly.

Finish *without the fumes*

The Schmitt family teams up to apply the first toning coat of a water-soluble dye solution to an oak baby crib built in the Arts and Crafts style.

Armed with sponges and often hand sprayers, Michael's wife Judy, twins Alana and Jennifer, and son Chris carefully apply dye to every inch of wood, as shown *above*. Then, they allow the dyed assembly to soak several minutes before drying it off with cloths and using compressed air to blow excess from seams and corners.

After the dyed pieces have dried for 12 to 24 hours, the crew lightly hand-sands them with gray nylon abrasive pads or quarter sheets of 320-grit. "The dye is very forgiving at this stage," notes Michael, "and they can work over any mistakes or missed glue spots and reapply the stain. It blends right back into itself."

Next come two coats of the final aniline, a slightly different color to give the piece depth and enhance the grain (see notes *right*). "The only limit to how much aniline we can put on from here is the saturation point of the wood fibers," adds Judy. "Once they have absorbed all the dye they can take, it begins to build on the surface and looks muddy. When we add more dye coats, we always let the wood dry thoroughly. Wet wood won't absorb dye."

Lacquer locks in the dye

"Before I start spraying lacquer," explains Michael, "we make sure the dye has completely dried. If it hasn't, moisture collects under the surface film and the finish deteriorates in just a few months. My helpers also lightly sand the dry, dyed wood with 400-grit to eliminate any final grain fuzzies."

To lock the dye in, Michael begins spraying with two quick sealer coats of lacquer cut 50 percent with thinner. When the sealer has dried, Judy and the children again sand with 320-grit silicon carbide paper. This sanding makes the sealer coat absolutely smooth.

"Before the final lacquer, I spray on a toned glaze [Behlen Natural Glaze tinted with black, umber, and raw sienna glazing stain]. After it has dried for a few hours, I follow with from three semigloss lacquer coats on the surfaces of least wear to eight coats on tabletops," says Michael. Between each, the wood is sanded with 400-grit paper.

"Finally, after the sprayed pieces have dried for a day or so, we rub them out with Wool Lube [a rubbing lubricant made by Behlen] and water," Michael adds. "The overall effect is a piece that looks mellow, old, and comfortable anywhere it's placed. Old Gustav would have been just as proud to put his name on it as we are."

The Schmitts' favorite aniline dyes

Water-soluble anilines are easy to work with, and their lightfastness (resistance to fading) rates higher than other types. Although there are several brands, the Schmitts use only those of J.E. Moser, available from woodworking supply dealers at about $4 per ounce, which makes more than a quart of stain with Michael's ratio. Listed below are the Moser aniline colors that give the perfect shades for their furniture, along with some of Michael's comments.

Light fumed. "For an even tone under the final color."

Medium fumed. "Used as above, but has a greenish cast to create richer browns."

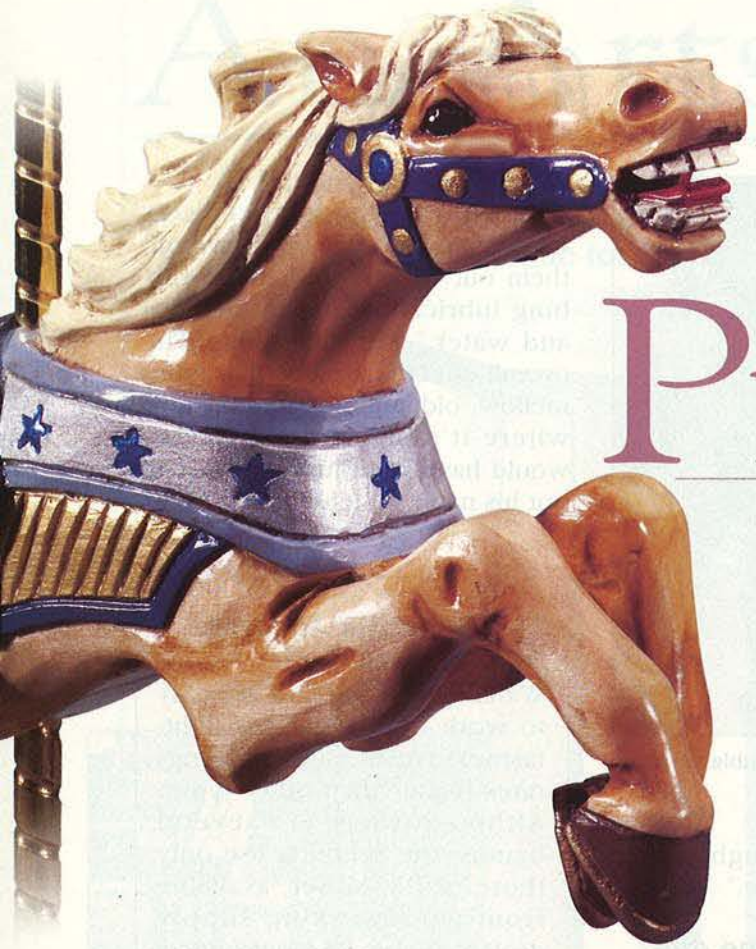
Dark fumed. "As a final color over either of the above."

English brown. "Similar to, but richer in red and deeper in color, than Dark fumed."

Flemish brown. "A final color that duplicates Stickley's deepest tone, which he called dark fumed. It grabs onto the quartersawn oak's rays for breathtaking effects."

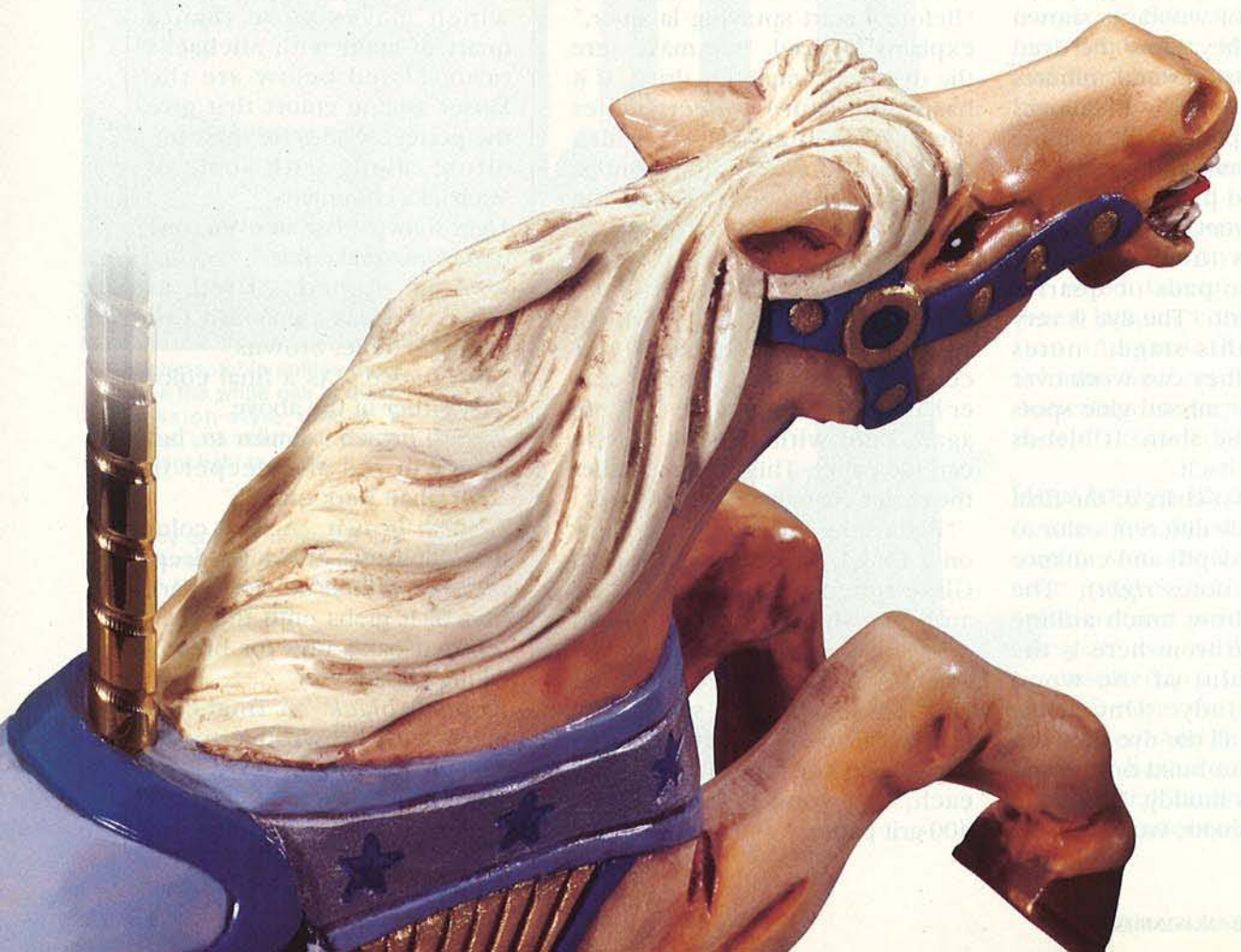
Flemish black. "A final-coat black with brown overtones. Not for the timid, so try it on scrap first."

Written by Peter J. Stephano Photographs: Wm. Hopkins



Fairgrounds Prancer

Don't be surprised if you hear a calliope and feel the rush of summer wind past your face while you carve this great merry-go-round miniature. Noted carousel-horse carver Jerry Reinhardt modeled this colorful flag-bearing horse after those that graced rides built by the C.W. Parker Co. between 1914 and 1925.



Print this article

See the *WOOD PATTERNS®* insert for full-size patterns

While drilling the body for the pole, steady it with a simple notched block. Keep the body nearly level.

Cutting out the blank is just the ticket for starting

Note: *Jerry carves his horses with traditional gouges and knives. If you're a power-carver, the horse lends itself to that, too.*

1 Photocopy the Flag Horse full-size patterns in the *WOOD PATTERNS®* insert in the middle of the magazine.

The horse's right and left sides differ in decoration; that's usual for carousel horses. People watching a merry-go-round see only one side of the horses, so carousel makers put the most elaborate ornamentation on that side—called the romance side—and left the other side relatively plain. American carousels rotate counterclockwise, making the horse's right side the romance side.

2 Transfer the Right Side View pattern to a 1½×6×11" piece of basswood, jelutong, or other carving wood. To do this, lay transfer paper (a waxless carbon paper) between the wood and the pattern, and trace the pattern with a sharp pencil.

Similarly, trace the flag that hangs from the horse's saddle onto a separate piece of stock about ⅛" thick. Maintain the same grain direction as on the horse.

3 Scrollsaw or bandsaw around the horse outline. Staying close to the line will simplify carving later. Scrollsaw the flag.

4 Cut the openings under the tail and in the mane. To do this, drill blade start holes where shown, and cut out the waste with a scrollsaw or coping saw.

5 Saw the head from the body at the line indicated. A fine-tooth handsaw such as a Japanese razor saw will make a smooth cut here.

6 Drill a ¼" hole through the body for the pole. Center the hole on top of the body right in front of the saddle. Support the horse with a fixture like the one shown *above* as you drill the hole. Make the fixture by cutting a 1½×1½" notch in the end of a 6" length of scrap 2×4.

Keep the body almost level or slightly head-up for drilling. (Don't put the horse at such an angle that someone trying to sit on the saddle would slide off over the back.)

Give your horse legs

1 On the top and bottom edges of the front legs and around the edge of the tail and hind legs, draw lines ½" from each side, dividing the thickness of the blank into thirds. The portion between the legs is waste. The center portion of the back will be the tail.

Continued

2 Separate the hind legs. You can cut out some of the waste with a coping saw, then carve the rest away with gouges. Saw through between the tail and the left leg, but leave the tail connected to the inside of the right leg. Saw the tip of the tail to a point, as shown *right*.

3 Cut out the waste between the front legs. Be careful not to saw kerfs in the body.

After separating the front legs, the horse will have six hooves. That's too many, of course, so cut one off each front leg. For instance, you could leave the foremost hoof on the right leg, the other one on the left. (That's what Jerry did on the horse shown.) Clean up the sawn surfaces on the legs with a gouge.

To draw lines parallel to the sides of the carving, such as the leg lines, hold the pencil against your index finger, then guide the finger against the blank's sides.

Cut the end of the tail to a point, and separate it from the left leg. Leave it connected to the inside of the right hind leg.

It's time to turn to the tail

1 Carve away the waste areas alongside the tail behind the horse's rump and above the hind legs. Sketch guidelines for this onto the unpatterned side of the horse, referring to the Left Side pattern.

You can remove some of the waste through careful use of a backsaw or coping saw. Then, with gouges or power-carving equipment, carve to the pattern profile on each side.

2 Carve the sides of the tail flat, more or less, and redraw on it the pattern lines that you cut away.

3 Glue the flag cutout to the romance side of the horse. Align the top of the flag with the pattern line that marks the lower edge of the saddle's seat.

Get a good head start

1 Rough out the head while it's still off the horse. Start by drawing a centerline along the top edge of the head blank, from the nose to a point between the ears.

Then, referring to the Top View pattern, draw the carving lines for the head on the edge of the blank, measuring from the centerline to keep them symmetrical. Align the features on this view with the corresponding ones on the side of the head.

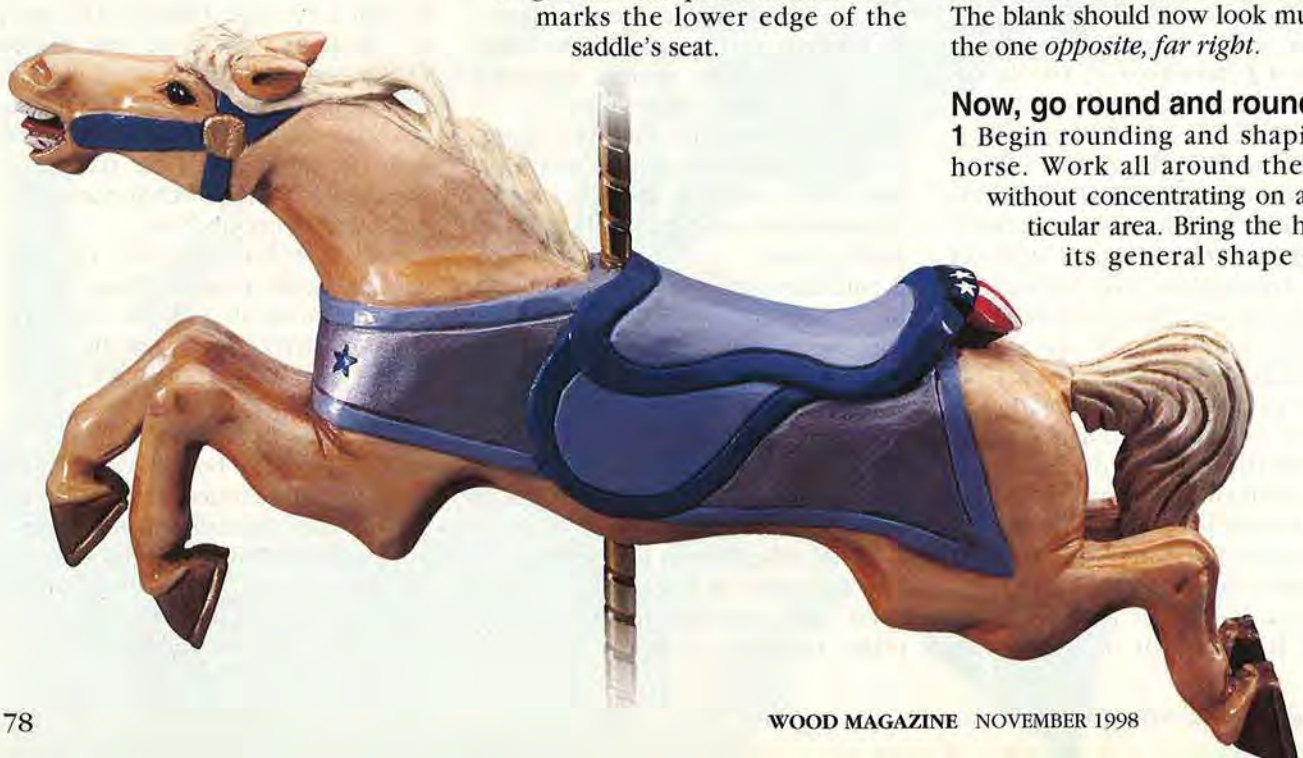
2 Grip the neck in a vise, then cut along the top-view outline of the head with a coping saw. Cut from the nose to the ears on each side. At the ears, curve your cut outward to leave the neck as a block. Redraw the carving lines on both sides of the head. Take care to locate the eyes correctly and in the same place on both sides.

3 Glue the neck to the body. Carousel horses usually look to the right, rarely straight ahead. So rotate the neck slightly to bring the right nostril out over the right leg, as shown on the Top View pattern and in the detail photos. Clamp the head and neck to the body with a heavy rubber band.

4 Draw a centerline along the horse's back, from the neck to the tail. Draw another line up the back of the neck, connecting the point where the line on the back meets the neck with the end of the centerline on the head. The blank should now look much like the one *opposite, far right*.

Now, go round and round

1 Begin rounding and shaping the horse. Work all around the figure without concentrating on any particular area. Bring the horse to its general shape at this



point, referring to the photos of the finished carving. Note that the horse is somewhat slab-sided; this isn't a miniature of a horse—it's a miniature of a stylized representation of a horse.

2 As you shape the back, sides, and belly, leave sufficient material to carve the raised trappings later. Study the photos of the finished carving to see how these details stand out from the surface.

3 As you blend the neck into the body, leave plenty of material to carve the mane later. The neck twists to the right slightly, so keep an eye on the centerline to follow the curve.

4 Make the neck slightly narrower than the shoulders at the glue joint, then thin it as it approaches the head. The widest spot on the head—across the eyes—should equal roughly two-thirds of the body width, or about 1".

5 Start carving the head with the mouth and teeth. Make the teeth big—about ⅛" wide. Carve the front teeth straight across, the corner ones at 45 degrees, and the back teeth parallel to the centerline.

6 Form the nostrils with a deep, narrow gouge, such as a 3/16" no. 9. Shape the chin as a half-ball. Narrow the ridge of the nose to about ¼" between the nose and the eyes, flaring it out to full head width at the eyes and nearly as wide at the nostrils.

7 Sketch in a football-shaped eye on each side, placing the ends on a line that extends from the base of the ear to the nostril.

To carve the eye, first cut around the outline with a small (⅛" or so) V-tool. Press a 3/16" eye punch straight into the center of the outlined eye to form the round eyeball. Then, with a sharp pointed knife, carve a small triangular chip out of each corner.

Tackle the trappings

1 Referring to the patterns, redraw lines for the trappings. Then begin carving them, principally with V-tools and shallow gouges. A good approach is to start with the trappings at the highest level, then work down to the lowest level.

2 Carve the saddle and shield on the horse's back, outlining them with a V-tool and forming the shape with gouges. When outlining with the V-tool, keep the wing of the tool that's adjacent to the cutting line nearly perpendicular to the surface as you cut.

3 Shave down the top edge of the onlaid flag to look as if the saddle is lying over it. The horizontal lines on the flag represent folds in the cloth. Give them their initial shape with a V-tool and gouges, and carve in a few random wrinkles with a gouge.

4 Detail the mane and tail as hanks of hair curling over and under each other. Avoid a uniform look.

5 Finish up with details such as horseshoes, gouge marks for the muscles, and jewels on the trappings. You can form round jewels easily with an eye punch or a 3/32" nail set. Carve the stars with a V-tool.

6 Inspect the carving for missing details or bad cuts, and correct them. Clean up any fuzzy areas, flakes, or splinters, and be sure all saw marks have been smoothed away. Give the carving a final burnishing against a 120-grit flap-wheel sander, taking care not to sand away any details.

Paint your horse, and put it on display

1 Spray on several coats of semigloss clear lacquer to seal the carving for painting. Sand lightly between coats.

2 Paint the carving with acrylic craft paints. To hold the horse, stick a length of dowel rod into the pole hole. After the paint dries, spray on another coat of lacquer before applying an antiquing glaze. Put on a final coat of lacquer when the glaze dries.

3 Cut an oval or rectangular base of walnut or other hardwood about ¾×4×12". Drill a ¼" hole ½" deep at the center. Sand and finish. Mount the horse on a piece of ¼" dowel rod or brass rod about 8" long. (If you use a dowel, paint it brass color.)

Slide the rod through the hole in the horse, and secure it with a dab of cyanoacrylate adhesive. Glue the bottom of the rod into the base hole.

Buying Guide

Book. *Carving Miniature Carousel Animals-Country Fair Style* by Jerry Reinhardt, (includes this horse and others) $12.95 plus shipping and handling (call for amount), order item no. 130611, Woodcraft Supply, 800/225-1153. An autographed copy is available for $15.95 ppd. in the U.S. from Jerry B. Reinhardt, 18770 Metcalf, Stilwell, KS 66085.

Project Design: Jerry Reinhardt Illustrations: Roxanne LeMoine; Lorna Johnson Photographs: Marty Baldwin; Hetherington Photography

Tilt-Top Router Table

An open-and-close shop tool designed with you in mind

Count the features of this fully loaded router table, and you'll quickly conclude that you've got to have one. For starters, the table flips up for easy changing of bits and checking bit height. A sealed compartment underneath, fitted with a vacuum port, takes care of sawdust. Below that, you'll find a slide-out shelf for storing all kinds of bits and accessories. And, for hair-splitting accuracy, we added an Incra Jig system so you can achieve amazing results.

Another WOOD MAGAZINE EXCLUSIVE

Print this article

Start with the basic cabinet

1 Cut the cabinet sides (A) and back (B) to the sizes listed in the Bill of Materials from ¾" medium-density fiberboard (MDF). As noted on the Cutting Diagram, MDF measures 1" wider and longer than regular 4×8' sheet goods.

2 Using the Side Panel drawing *below right* for reference, mark the centerpoint, and cut the vacuum hole in the left-hand side panel (A) to fit your vacuum hose. (We drilled a blade start hole, and cut the hole to shape with a jigsaw.) To prevent chipping, rout a ⅛" chamfer along the inside and outside edges of the hose hole.

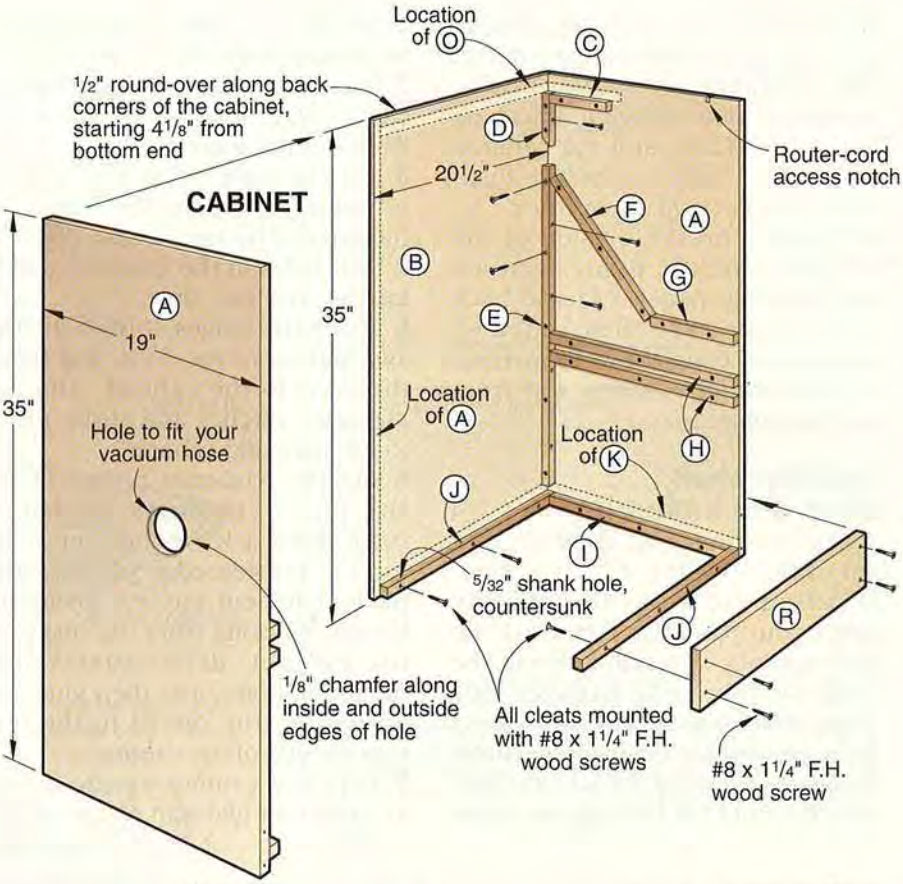
3 Mark and cut a notch in the right-hand side panel for the cord from the router to exit the cabinet.

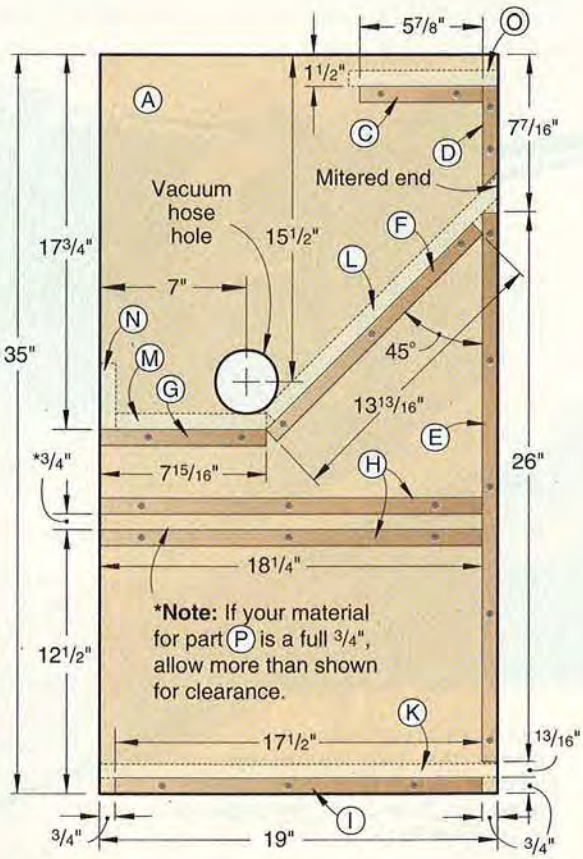
4 From ¾" solid stock (we recommend maple or birch), cut the ¾×¾" cleats (C–J) to the lengths listed in the Bill of Materials. (We ripped ¾"-wide strips from the edge of ¾" stock and then crosscut the strips to length.)

5 Using the Side Panel and Cabinet drawings at *right* for reference, mark the locations of the cleats on the inside face of each side panel (A). Then, drill countersunk mounting holes in the cleats, and screw them in place as shown in *photo A*.

6 Cut the bottom (K), dust- chute pieces (L, M, N), and support (O) to size from MDF. For a tight fit, miter-cut one edge of part L and D.

Continued





Mark the cleat locations, drill the mounting holes, and screw the cleats in place on the cabinet sides.

Router Table

7 Glue and clamp the basic cabinet assembly (A, B, K, O) together in the configuration shown on the Exploded View drawing, checking for square. Then, drill the countersunk holes, and screw the dust-chute pieces (L, M, N) in place.

8 Working on the outside of the cabinet, sand the joints between the two side panels (A) and back panel (B) smooth. Then, rout a ½" round-over along the back corners of the cabinet, starting 4⅛" from the bottom ends.

Add the shelf, door, and base trim

1 Cut the router-bit shelf (P) and small-bit holder (Q) to size. Locating the holes to properly space your particular bits, mark the centerpoints, and drill holes in the shelf for your large-diameter bits. Then, drill holes in the bit holder Q for your smaller bits. The small-bit holder works great for straight bits, which would fall through the holes in the shelf (P). Glue and clamp the bit holder to the shelf.

2 Cut the base-trim support piece (R) to size, and screw it to the front of the cabinet.

3 Cut the door (S) to size. Rout a ½" round-over along the sides (not the top and bottom) of the door.

4 Drill holes in the door for attaching the wire pull later.

5 Attach the hinges 4" from the top and bottom of the door, and hinge the door to the cabinet. Add the magnetic catches and strike plates to the door and cabinet.

6 Cut the base-trim pieces (T) to size plus 1" in length from solid stock. Rout a ½" round-over along the top outside edge of each trim piece. Miter-cut the trim pieces to length. Working from the inside of the cabinet, drill countersunk mounting holes, and then glue and screw the trim pieces to the bottom outside of the cabinet.

7 Turn the cabinet upside down, and nail four glides in place.

Continued

Using contact cement, adhere the two oversized pieces of plastic laminate to the laminated top. Then, rout the edges of the laminate flush.

Bill of Materials

Part	Finished Size* T	W	L	Matl.	Qty.
CABINET					
A sides	¾"	19"	35"	MF	2
B back	¾"	20½"	35"	MF	1
C* cleats	¾"	¾"	5⅞"	M	2
D* cleats	¾"	¾"	4⅞"	M	2
E* cleats	¾"	¾"	26"	M	2
F* cleats	¾"	¾"	13 13/16"	M	2
G* cleats	¾"	¾"	7 15/16"	M	2
H* cleats	¾"	¾"	18¼"	M	4
I* cleats	¾"	¾"	17½"	M	2
J* cleats	¾"	¾"	19"	M	2
K bottom	¾"	19"	19"	MF	1
L sloped dust panel	¾"	15⅞"	19"	MF	1
M bottom dust panel	¾"	7 3/16"	19"	MF	1
N dust bin front	¾"	3"	19"	MF	1
O support	¾"	7⅛"	19"	MF	1
P shelf	¾"	18⅛"	18⅞"	MF	1
Q bit holder	¾"	1½"	16¾"	M	1
R support	¾"	4"	20½"	MF	1
S door	¾"	20½"	30⅞"	MF	1
T* base trim	¾"	4"	22"	M	4
ROUTER TABLE					
U* top	1½"	28"	28"	LMF	1
V pivot block	¾"	1"	2¼"	M	1
W support bar	¼"	1"	12"	A	1

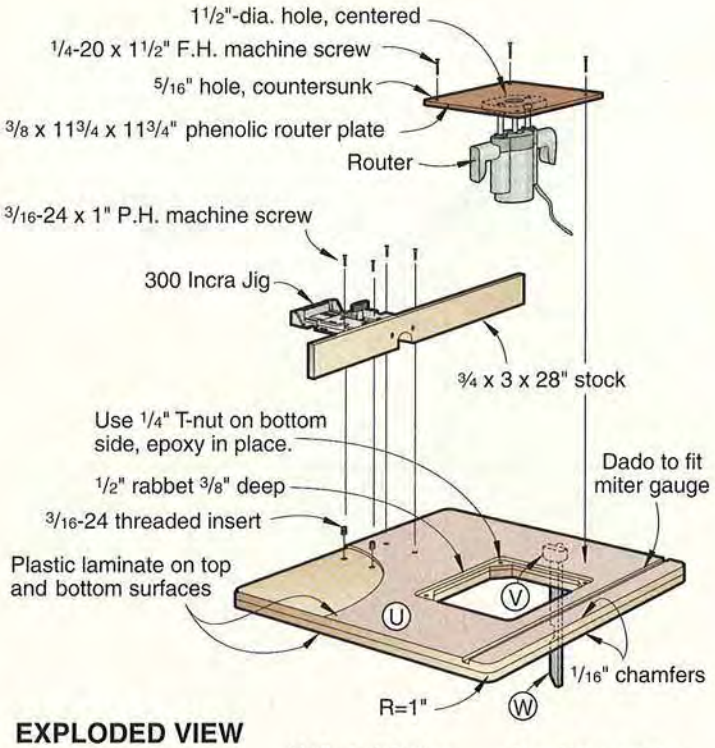
*Initially cut parts marked with an *oversized. Trim to finished size according to the instructions.

Materials Key: MF–medium-density fiberboard, M–maple or birch, LMF–laminated medium-density fiberboard, A–aluminum.

Supplies: ⅜×12×12" phenolic router plate, #8×1¼" flathead wood screws, 1½" continuous hinge 19" long with mounting screws, 4–¼-20×1½" flathead machine screws, 4–¼" prongless T-nuts, power switch (we used a Sears, cat. no. 9-13632), one pair of cabinet hinges (we used Amerock #BP-5988-M26), 4–1⅛" glides, 2–3½" wire pulls, pair of magnetic catches and strike plates, plastic laminate, contact cement, 4–3/16-24×1" panhead machine screws with mating 4–3/16-24 threaded inserts, ¼-20×1½" bolt trimmed to 1⅛" long, ¼×1" aluminum bar stock for support bar (part W), primer, paint, and clear finish.

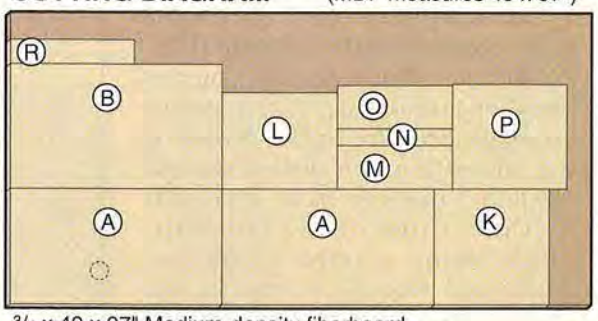
Buying Guide

Tilt-top router-table kit. The kit contains everything noted in the Supplies listing *above* except the plastic laminate, contact cement, primer, paint, and finish. Kit no. TTRT, $64.95 ppd. Add $39.95 ppd. for the 300 Incra Jig or $234.95 ppd. for the 316 Incra Jig Ultra. Schlabaugh and Sons Woodworking, 720 14th Street, Kalona, IA 52247 or call 800/346-9663 to order. E-mail: schsons@kctc.net

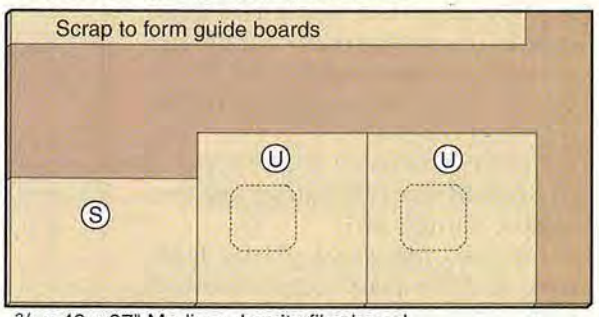


CUTTING DIAGRAM

(MDF measures 49 x 97")



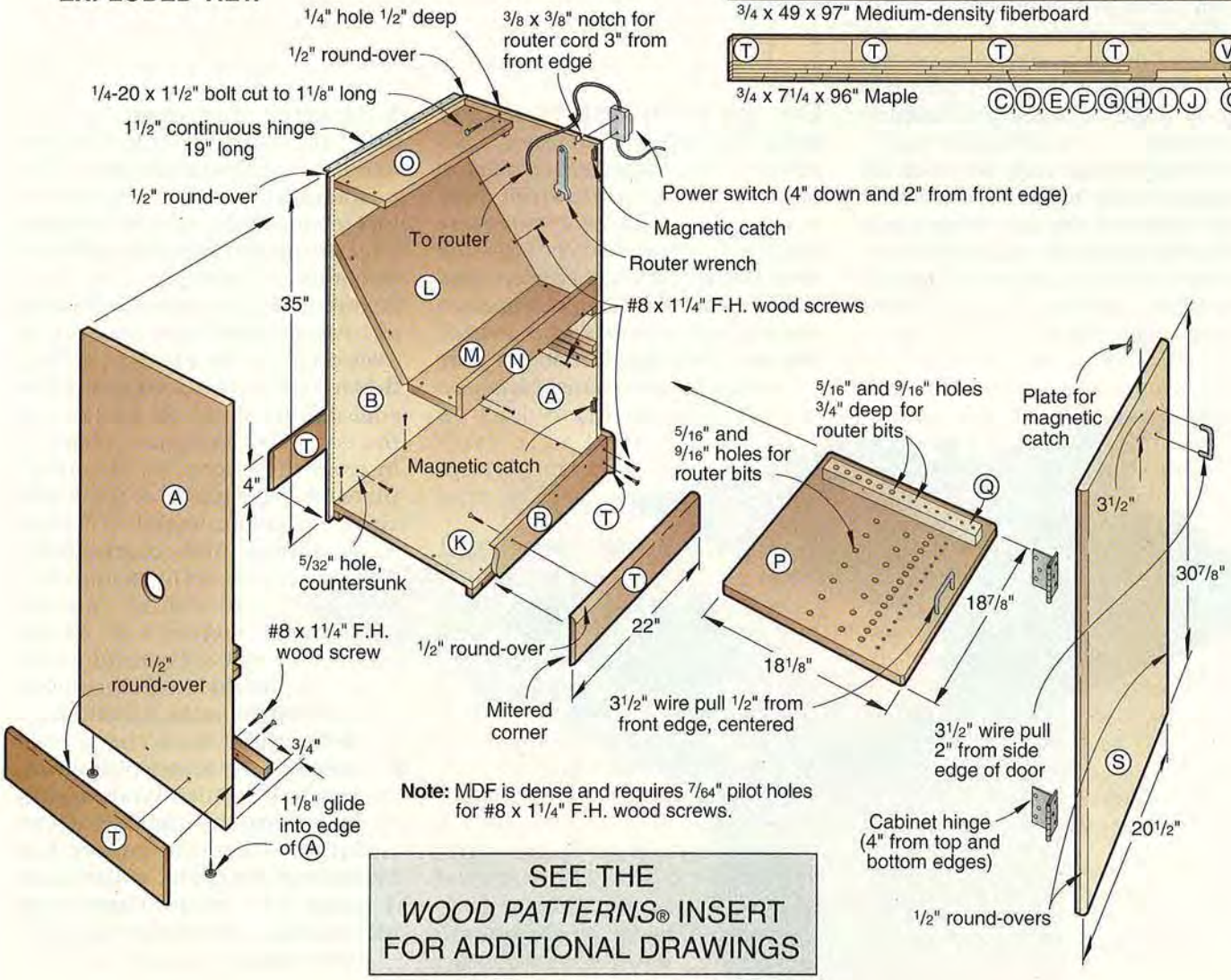
¾ x 49 x 97" Medium-density fiberboard



¾ x 49 x 97" Medium-density fiberboard

¾ x 7¼ x 96" Maple C D E F G H I J Q

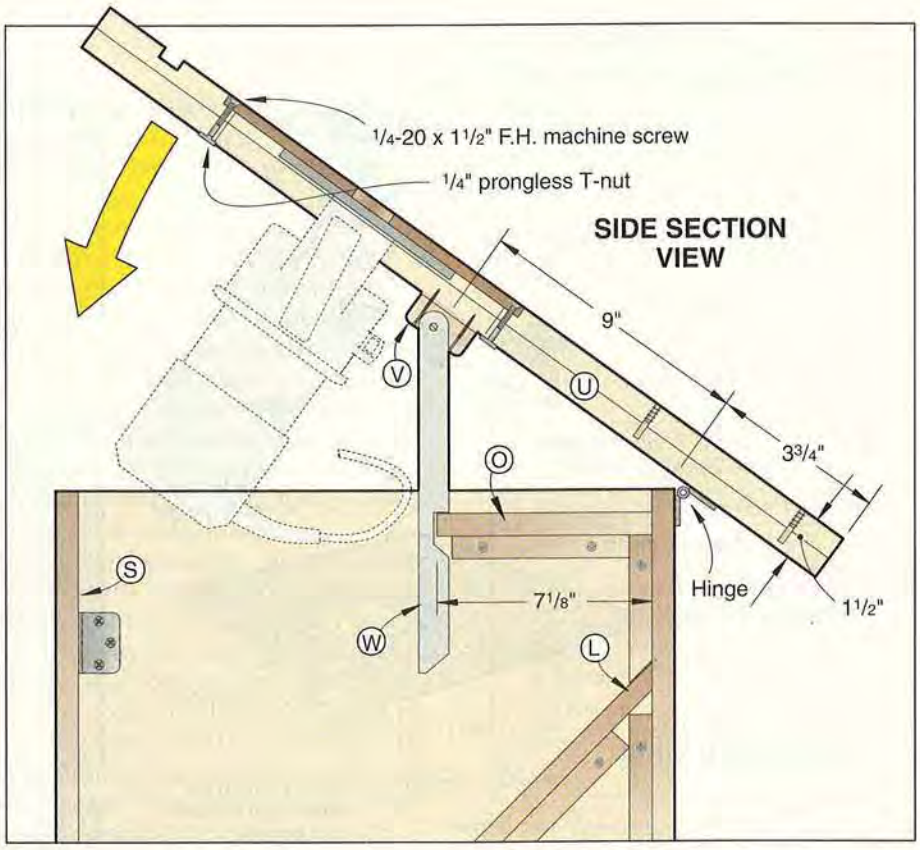
EXPLODED VIEW



Note: MDF is dense and requires 7/64" pilot holes for #8 x 1¼" F.H. wood screws.

SEE THE *WOOD PATTERNS*® INSERT FOR ADDITIONAL DRAWINGS

Router Table



Next, add the tilting top

1 Cut two pieces of ¾" fiberboard to 29" square for the tabletop (U).

2 Glue and clamp the two pieces together face-to-face. (For uniform clamping pressure in the center of the lamination, we drilled several mounting holes in from what will be the bottom of the tabletop. Then, using clamps along the edges and #8×1¼" screws in the center, we secured the two pieces tightly together until the glue dried. Then, we removed all the screws so we wouldn't hit them when doing the machining in the following steps.)

3 Cut the laminated router top (U) to finished size (28" square), radiusing the corners at 1".

4 Cut two pieces of plastic laminate to 30" square. Apply contact cement to all mating surfaces, and adhere the laminate to both surfaces of the laminated tabletop (U). Use a rubber roller to ensure a good bond between the laminate and MDF.

5 Using a trimming bit, rout the edges of the laminate flush with the edges of the 1½"-thick top as shown in *photo B* on *page 82*.

6 Cut or rout a dado in the top (U) to form a slot that fits your miter-gauge guide bar.

Cut the table insert into the top

Note: *When tipping the tabletop back, it's important to have the router plate (with the router attached) secured to the tabletop so it doesn't fall out. For that reason, we secured the router plate to the top with screws and T-nuts. See the Buying Guide for our source for the router plate and hardware.*

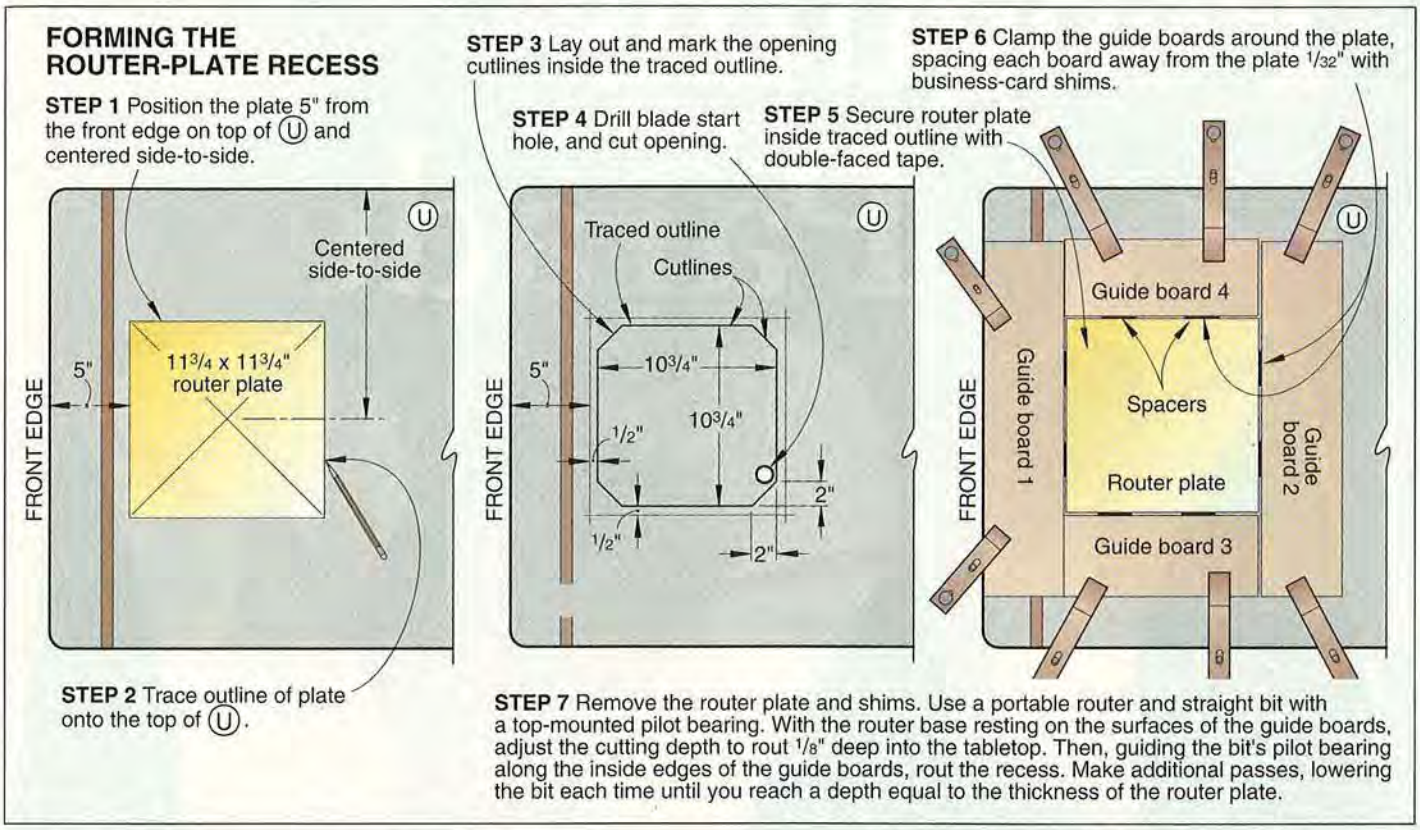
1 The router plate we used and listed in the Buying Guide is advertised as a 12"-square plate. The plate actually measures a bit less. Using your tablesaw, cut adjoining edges to square up the plate and trim it to 11¾" square.

2 Follow the seven-step drawing *above right* to form the router-plate recess in the top (U).

3 Mark the centerpoints, and use your drill press to drill 5/16" holes in the corners of the router plate, ¾" in from the edges. Fit the router plate in the recess, and use the holes as guides to drill 5/16" holes through the corners of the recess in the top (U).

4 Using epoxy, adhere a ¼" prongless T-nut into each 5/16" hole on the bottom side of the router tabletop.

5 Carefully mark the centerpoint on the router plate. Now, bore a 1½" hole (or one slightly larger than the diameter of your largest-diameter router bit) through the center of the router plate. (We used a Forstner bit running at 250–500 rpm for this operation.)


FORMING THE ROUTER-PLATE RECESS
STEP 1 Position the plate 5" from the front edge on top of Ⓤ and centered side-to-side.
Centered side-to-side
11¾ x 11¾" router plate
5"
FRONT EDGE
Ⓤ
STEP 2 Trace outline of plate onto the top of Ⓤ.
STEP 3 Lay out and mark the opening cutlines inside the traced outline.
STEP 4 Drill blade start hole, and cut opening.
Traced outline
Cutlines
10¾"
10¾"
½"
½"
2"
2"
STEP 5 Secure router plate inside traced outline with double-faced tape.
STEP 6 Clamp the guide boards around the plate, spacing each board away from the plate 1/32" with business-card shims.
Guide board 4
Guide board 1
Spacers
Router plate
Guide board 2
Guide board 3
STEP 7 Remove the router plate and shims. Use a portable router and straight bit with a top-mounted pilot bearing. With the router base resting on the surfaces of the guide boards, adjust the cutting depth to rout 1/8" deep into the tabletop. Then, guiding the bit's pilot bearing along the inside edges of the guide boards, rout the recess. Make additional passes, lowering the bit each time until you reach a depth equal to the thickness of the router plate.

6 Countersink the 5/16" holes in the router plate for the ¼-20×1½" flathead machine screws.

7 Remove the baseplate from your router. Using the holes in your baseplate as guides, mark and drill corresponding holes in the 11¾"-square router plate. Countersink the holes. Mount your router to the router plate. Insert the router and plate into the router-table opening, and secure the plate with machine screws.

Adding a fence system

Note: *We have published plans for several fence systems over the years in* WOOD *magazine, most recently in February 1998, issue #103, and earlier in January 1993, issue #58. For this project, we chose the commercially available Incra system. See the Buying Guide for our source for this versatile yet inexpensive system. For a more elaborate setup, try the Incra Jig Ultra shown* bottom left *on the* opposite page *and illustrated on the pattern insert. Information on the Ultra is available from the company listed in the Buying Guide.*

1 Mark the centerpoints for the four threaded inserts on the router top (U) where dimensioned on the Router Tabletop Top View drawing on the pattern insert.

2 Drill a ½" hole at each marked centerpoint just through the laminate (1/16" deep). (We used a Forstner bit to make this recess.) Switch bits, and drill a 3/8" hole 1¼" deep centered in each ½" hole.

3 Double-nut a bolt, and use it to drive a 5/16-24 threaded insert squarely into each hole. Attach an Incra Jig to the tabletop.

Attach the tabletop support

1 From ¾" maple, drill the holes and cut the pivot block (V) to shape, using the full-size pattern on the pattern insert for reference.

2 Transfer the support bar (W) pattern from the pattern insert to ¼×1" aluminum stock. Cut the piece to shape, and drill a ¼" hole through one end where marked.

3 Drill pilot holes, and glue and screw the pivot block (V) to the bottom of the router top where shown on the Router Tabletop drawing. Then, attach the support bar to the pivot block.

Finishing and final assembly

1 Remove the router plate and router from the router tabletop. Separate the top from the base cabinet. Remove the hardware, and sand the cabinet and tabletop edges smooth. Fill any imperfections and finish-sand.

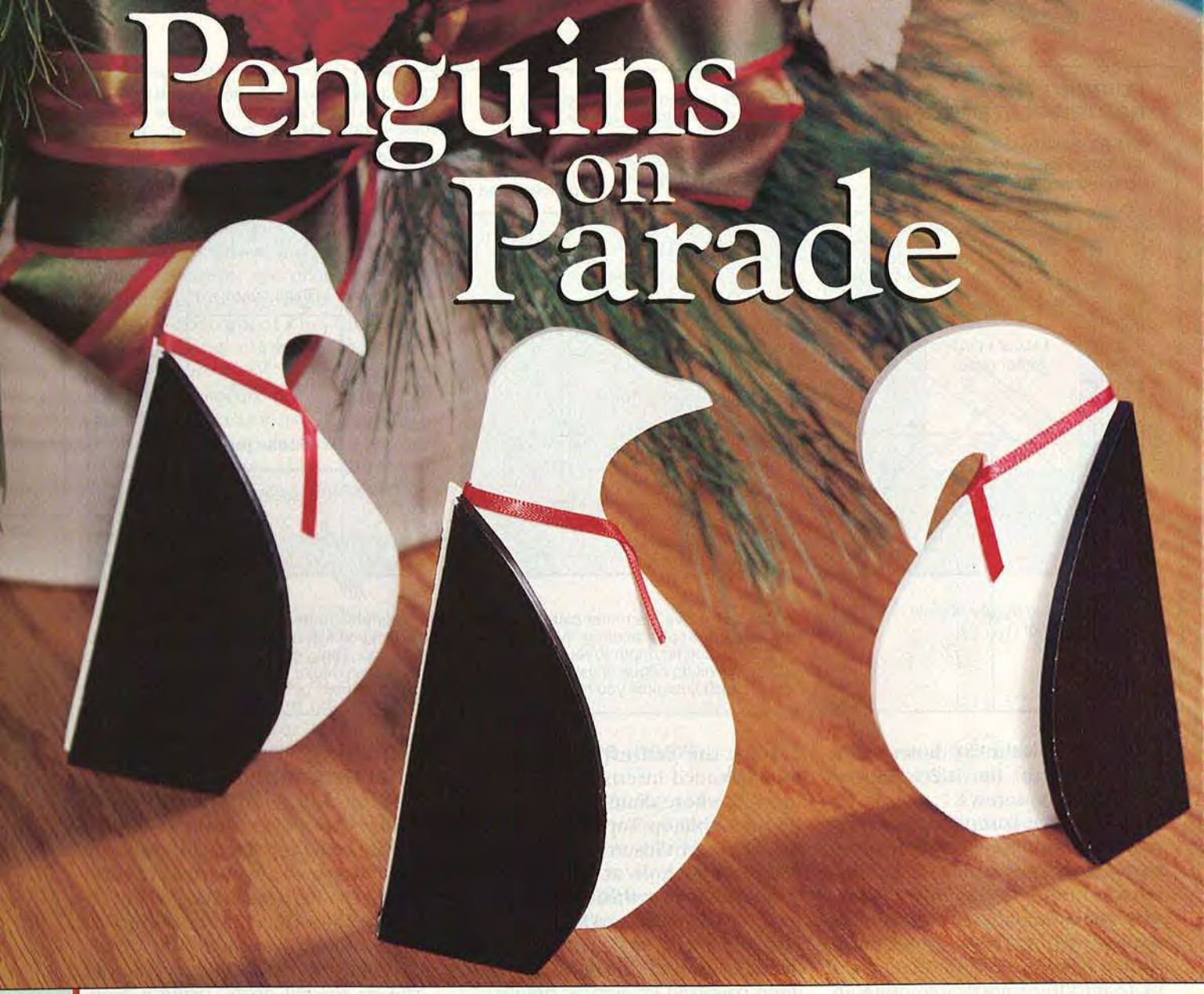
2 Prime the base cabinet. (We did this in several coats, using a sanding block with 220-grit sandpaper between coats to smooth the primer.) Paint the base cabinet as desired. Apply a clear finish to the edges of the router tabletop.

3 Hinge the router top and door to the cabinet. Reattach the magnetic catches and pulls. Then, reattach the router with attached plate to the router tabletop.

4 Attach the fence system of your choice. Attach a power switch to the cabinet, and plug the router cord into the switch. Fit your vacuum hose into the opening, and you're ready for business.

Written by Marlen Kemmet
Project Design: James R. Downing
Illustrations: Roxanne LeMoine; Lorna Johnson
Photographs: Hetherington Photography

Penguins on Parade



Talk about a great little gift idea for the holidays. This fun-loving threesome will bring good cheer to all who receive them. And, of course, you'll get credit for delivering the good tidings.

1 Using carbon paper or photocopies of the patterns and spray adhesive, transfer the full-size patterns on the *WOOD PATTERNS®* insert in the center of the magazine to poster board or hardboard. Cut the patterns to shape to form templates. (Since we planned on making several sets, we made templates. If you're making just a set or two, transfer the patterns directly to ⅛" stock.)

2 Use a sharp pencil to trace around the templates to transfer the patterns to ⅛" stock. (We used void-free birch plywood; see the Buying Guide for our source.)

3 Scrollsaw or bandsaw the pieces to shape. (We used a #4 scrollsaw blade, .033×.014, with 15 teeth per inch; a bandsaw fitted with a ⅛" blade also works well.)

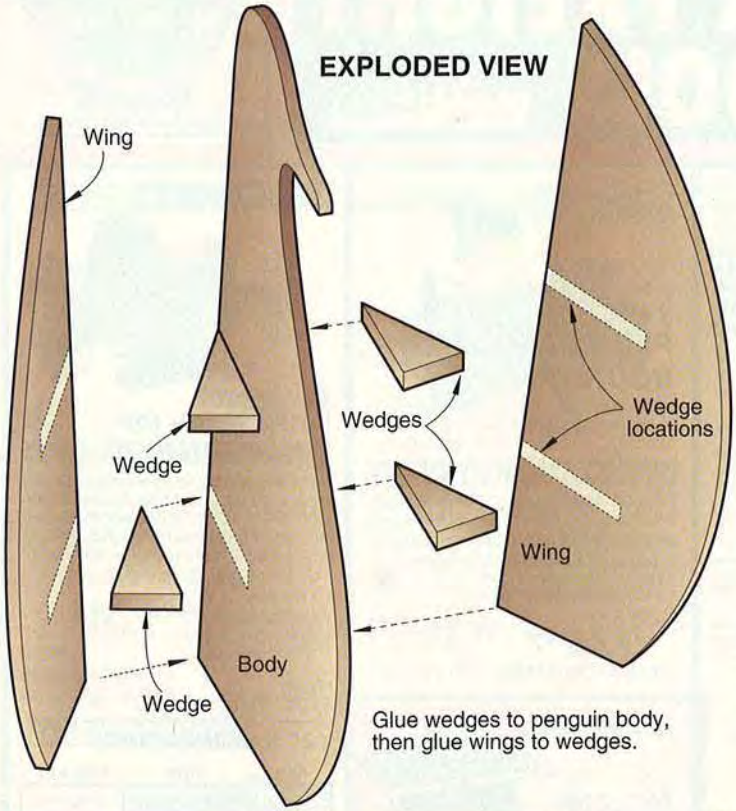
4 Lightly sand the edges and surfaces with 220-grit sandpaper. Scrollsawing or bandsawing the bodies and wings causes the edges to fuzz up slightly. Left unsanded, the fuzz becomes more noticeable after painting.

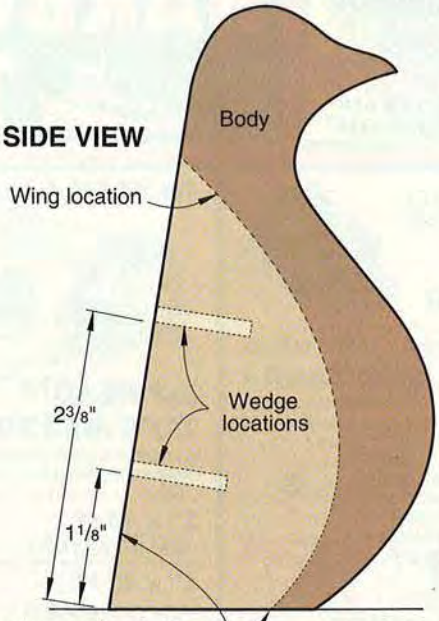
5 Glue the wedges to the body. Then, keeping the bottom and back edges of the wings flush with the body, glue them to the body/wedges as shown in the drawing *at right*. (We used instant glue to quickly assemble the penguin pieces.)

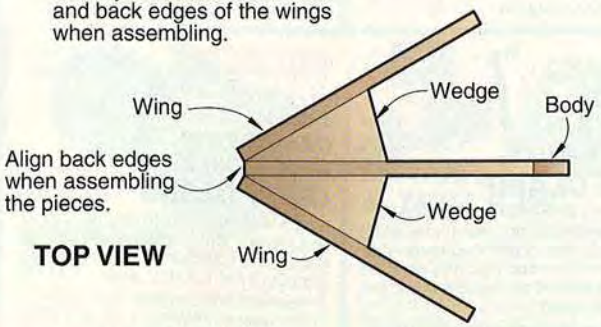
6 Spray on several coats of a quality gloss white enamel paint. If the painted surfaces get a bit rough, sand lightly with 320-grit sandpaper before applying the last coat. Using a small brush, paint the outside surface of the wings with flat or semigloss black paint.

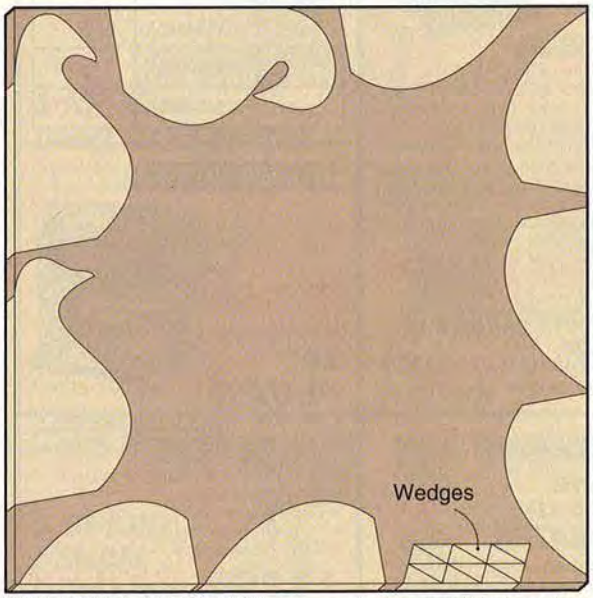
Written by Marlen Kemmet
Project Design: ©George Hans
Illustrations: Roxanne LeMoine
Photograph: Hetherington Studio

Print this article



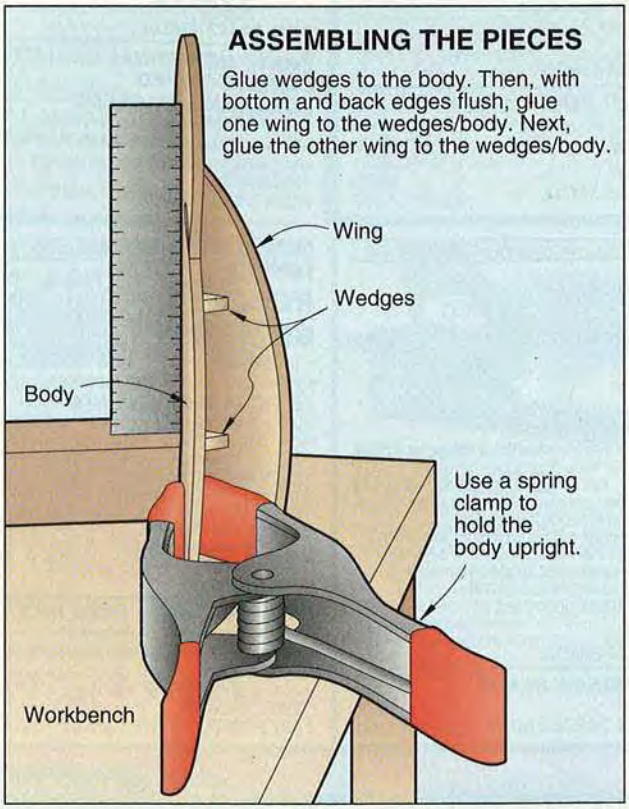

SIDE VIEW
Body
Wing location
2 3/8"
Wedge locations
1 1/8"
Keep bottom and back edges of body flush with the bottom and back edges of the wings when assembling.





CUTTING DIAGRAM
(Enough for 3 penguins)

1/8 x 12 x 12" Baltic birch plywood


ASSEMBLING THE PIECES
Glue wedges to the body. Then, with bottom and back edges flush, glue one wing to the wedges/body. Next, glue the other wing to the wedges/body.
Wing
Wedges
Body
Use a spring clamp to hold the body upright.
Workbench

Buying Guide

Void-free birch plywood. Three pieces of 1/8×12×12" plywood (enough for nine penguins), $9.95 ppd., or ten pieces (enough for 30 penguins), $19.95 ppd. Kit no. W109. Heritage Building Specialties, 205 North Cascade, Fergus Falls, MN 56537. Or call 800/524-4184 to order. View our full line of tabletop and yard-size plans within the WOOD STORE™ at http://www.woodmagazine.com

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CHICAGO Electric Power Tools

3-1/4" PLANER

- Front base has a V-groove to help guide in chamfering
- 2 blade cutter
- Depth adjustment knob
- Includes rabbeting guide plate/fence, sharpening holder, blade setting jig, replacement brushes, replacement belt
- D-handle with lock-on button
- 110V, 5 amps, 17,000 RPM
- 34,000 cuts per minute
- 1/10" maximum depth of cut; 3-1/4" planing width
- Tool weight: 6-1/4 lbs.

ITEM 32222-3MDA ~~$53.99~~ $39.99

2 PC. REPLACEMENT BLADES

ITEM 33262-0MDA $9.99

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1" x 25 FT. ITEM 37570-3MDA $4.99

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CHICAGO Electric Power Tools

3 HP PLUNGE ROUTER

Super duty unit provides the ultimate in router performance. Use to cut precision moldings, rabbets, dados, dovetails, recesses for inlays, and much more. 19 amp all ball bearing motor develops 23,000 RPM for unbelievably clean finishes. 2-1/2" plunge depth capacity allows easy penetration into or through work surfaces.

- Includes 1/4", 1/2", and 3/4" collets
- 115V, 19 amps, 8 foot cord
- 3 adjustable plunge settings
- Electric brake

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CENTRAL MACHINERY

12" DIRECT DRIVE BENCH TOP DISC SANDER

Get sharp, accurate finishes without burning or marring. Direct drive disc won't slip. Table tilts to 45°; 2" dust collection outlet; fan-cooled brushless motor; miter gauge, base pads prevent creeping; safety switch. Includes 60 grit, 12" sanding pad.

- 1 HP, 120V, 14.0 amps
- No load speed: 1793 RPM
- Wheel diameter: 12"
- Base: 13" x 10"
- Shipping wt.: 92 lbs.

ITEM 37297-1MDA $99.99

12" SANDING DISCS

GRIT	ITEM	PACK OF 2
36	38001-0MDA	$5.99
60	37958-0MDA	$5.99
120	37959-0MDA	$5.99
240	37960-0MDA	$5.99

Pittsburgh

Pittsburgh LIFETIME WARRANTY

2 PC. 3/4" HEAVY DUTY PIPE CLAMP

Constructed from heat-treated cast iron, these durable clamps keep your work rock steady. Just screw the handle side onto a 3/4" threaded pipe and slide the spring loaded end on. You're ready to go! Pipe not included.

- Handle screw operating range: 2-1/8"
- 1-1/2" throat depth
- Weight: 2-7/16 lbs.

ITEM 31255-1MDA $3.99

1/2" PIPE CLAMP

- 1-1/2" throat depth
- Weight: 1-4/5 lbs.

ITEM 37056-2MDA $2.99

LIMITED QUANTITIES

7-1/4" CARBIDE TIP ADJUSTABLE DADO BLADE 1/2 OFF

Long lasting molycarbide tips last up to 50 times longer than steel tips, and can be resharpened. 24 tooth design for cutting/grooving 3/16" to 13/16" wide.

1" arbor with 5/8" adapter; 4500 maximum RPM

~~$19.99~~ $9.99

ITEM 01493-4MDA

7-1/4" INDUSTRIAL QUALITY CARBIDE-TIPPED CIRCULAR SAW BLADE

24 tooth; 7000 RPM maximum rotation; 5/8" standard or diamond punch-out, arbor; Easy to sharpen or replace tips.

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10", 2 HP, BENCH TABLE SAW

Die cast aluminum table 25-3/4" x 16", has adjustable 17-7/8" x 2" rip fence and inch/metric scale for precise cutting. Blade adjustments control angle and depth of cut.

- Maximum depth of cut at 90°: 3-1/8"; at 45°: 2-1/2"
- Shipping weight: 36 lbs.
- Miter gauge adjusts 0° - 60° left and right
- Motor: 2 HP, 115V, 60 Hz, 10 amp, 4500 RPM
- Blade capacity: 10" with 5/8" arbor
- Blade sold separately, below

ITEM 35715-0MDA $119.99

10" 40 TOOTH CARBIDE TIP SAW BLADE

- 5/8" arbor

ITEM 00529-4MDA $9.99

CENTRAL MACHINERY

LIMITED QUANTITIES

10" PLANER

- 2 HP, 110V, 1 phase, 11 amp, 8000 RPM
- 5-1/8" working distance
- 10-1/8" x 9-1/8" feed table
- 19" x 16-5/8" x 16" overall dimensions
- 10-1/8" blade size
- 2-blade cutter head
- 61 lbs. shipping weight
- Stand sold separately

~~$239.99~~ $189.99

ITEM 06935-8MDA

PLANER STAND

- 20" x 10" x 27"
- Shipping weight: 20 lbs.

ITEM 32969-3MDA $29.99

REPLACEMENT BLADE SETS (2 PCS.)

STEEL	ITEM	PRICE
Spring	32970-2MDA	$21.99
High Speed	36068-1MDA	$29.99

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- VARIABLE SPEED
- BIG 12" THROAT
- 3/4 HP

12" BANDSAW

Precision three-wheeled design cuts material up to 12" wide and makes bevel cuts from 0° to 45°. Electronic variable speed from 0 to 2645 feet per minute. Includes miter gauge. Blade sold separately, below.
115V; Table: slotted cast aluminum: 13-1/2" x 13-1/2"; Work capacity: 12" x 4-5/8"H; Requires 62" blade; Overall dimensions: 25"L x 13-1/2"W x 23-3/4"H; Shipping weight: 32 lbs.

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BANDSAW BLADE

- 6 TPI

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TUNGSTEN CARBIDE TIPPED ROUTER BIT SETS

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- Individually organized storage cases

15 PC. ASSORTED BITS

1-1/4" rabbeting♦, 1-3/8" cove♦, 1-1/16" roman ogee♦, 1-1/4" rounding over♦, 1/2" flush trimming♦ 1-3/16" 45° chamfer♦, 1/2" dovetail, 3/4" straight, 1/2" straight, 3/8" V-groove, 1/4" combination panel, 1/4" straight, 1/2" mortising, 1/4" cove, 1/8" straight. ♦Includes pilot bearing

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- 2 flutes each

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- Cast iron base • 3/4" arbor
- Shipping weight: 47 lbs.

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- CFM: 9.5 @ 50 PSI
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- Includes: (2000) 18 gauge brads, (2000) 18 gauge staples, lubricating oil, & carrying case • 1/4" NPT
- 100 brad capacity, 110 staple capacity
- Brad length: 5/8" to 1-1/4"
- Nonslip rubber grip
- Staple length: 1/2" to 1-1/8"
- 100 PSI maximum pressure
- 3 lbs. tool weight

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3/16" crown	2000	31983 -0MDA	$3.99
11/32" crown	1200	31982 -5MDA	$3.99
1/2" crown	800	31981 -0MDA	$2.99
BRADS			
5/8" w/heads	3000	31984 -0MDA	$3.99
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7-1/4" CIRCULAR SAW

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- 10 amps, 2-1/3 HP, 4600 RPM
- Handy scales and cutting guide
- Factory reconditioned, factory perfect

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- 5/8" arbor, 24 tooth blade

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DELTA

LIMITED QUANTITIES

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Aggressive 12 amp, 5500 RPM gear-driven motor for tough cutting jobs. Equipped with a carbide tipped 6-1/2" diameter blade. Crosscuts, miters, bevels, cuts compounds - makes just about any cut (except rip). Horizontal D-handle design for positive, full grip control. Two rigid stainless steel rods minimize deflection and maximize accuracy.

Motor: 12 amps, 120V; Blade diameter: 6-1/2"; Arbor: 5/8"; Speed 5500 RPM; Capacity: Cut-off at 90°: 12"; Cut-off at 45° miter: 9-1/2"; Depth of cut at 90°: 1-3/4"; Depth of cut at 45° bevel: 1-5/8"; Positive miter stops: 0°, 22-1/2°, 31.62°, & 45°; Weight: 42 lbs.

~~$299.99~~ **$249.99**

ITEM 52880-3MDA

CENTRAL MACHINERY

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- 2" stroke, 8-1/4" swing
- Speeds: 620, 1100, 1720, 2340 and 3100 RPM
- 1/3 HP motor moves at 1720 RPM
- Table: 8-1/4" square • 1/2" chuck
- 8-1/4" maximum distance spindle to table
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- No more lost chuck keys

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Includes: 7-1/2" x 5" cast aluminum table, miter gauge, and adjustable backstop; 4000 FPM belt speed; 1725 RPM disc speed; 1/3 HP, 1725 RPM, 115V, single phase

LIMITED QUANTITIES

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BN200	18 ga. brad nailer kit 3/4" - 2"	134
CDA250	bammer cdls 15 ga 2 1/2" fin nailer	277
CF1400	1 hp pancake compressor	194
CF15401	1/2 hp side stack compressor	292
CF24002	hp side stack compressor	318
CFN250	bammer cdls 16 ga 1-2 1/2" fin nailer	277
DA250	15 ga. angle fin nailer kit 1 1/4" - 2 1/2"	199
DA250A	15 ga. ang fin nailer kit 1 1/4" - 2 1/2"	234
FN250A	16 ga. finish nailer kit 3/4" - 2 1/2"	182
FR350	framing nailer w/case 3 1/2" capacity	287
NS100	narrow crown stapler kit 1/2" - 1"	94
NS150	narrow crown stapler kit 1/2" - 1 1/2"	154
NSS150	18 ga 1/4" narrow crwn stapler kit	178
330	speed block finishing sander	67
332	Quiksand 5" rndm orb w/stlkit pad	58
333	Quiksand w/hook & loop, dustls	64
333VS	5" var. speed Quiksand ros, dstls	84
340	1/4 sheet finishing sander dstls	54
352VS	3" x 21" belt sander dstls w/var sp	174
360	3" x 24" belt sander w/dust bag	213
360VS	3" x 24" belt sander, vs with bag	228
362	4" x 24" belt sander w/dust bag	222
362VS	4" x 24" vs dustless belt sander	236
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5116	omni jig	274
556	bisc joiner w/case & tilt fence	134
557	deluxe plate joiner kit	197
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691	1 1/2 hp "d" handle router	159
693PK	1 1/2 hp plunge router, fixed base, cs	194
697	router table with 1 1/2 h p motor	232
698	router table only	134
6931	plunge router base	82
7116	new 24" omnijig	308
7336	6" random orbit var. speed sander	142
7518	3 1/4 hp fixed base router-5 sp	288
7539	3 1/4 hp plunge router-5 speed	289
9444	profile sander kit w/accys & cs	99
9444VS	Var. speed profile sander kit	111
9543	Quik-Change bayonet saw kit	166
9862	12v cordless kit w/2 batteries, case	152
9862F	12v kit w/2 batt, charger & flashlite	159
9872	14.4v crdls drill kit w/2 batt. & case	186
9874	14.4v 1/2" t handle cdls drill kit	199

Panasonic

EYC003	combo 15.6v drill & 12v wood saw w/4 batteries	398
EY6100EQKW	12V cdls drill w/kit 2 batteries, chrgr & case	174
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JML-1014	mini lathe	324

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1275DVS	3" x 24" vs dustless belt sander	213
1276DVS	4" x 24" vs dustless belt sander	224
1278VSK	compact belt sander kit	128
1295DH	5" random orbit sander	82
1584AVSK	clic barrel handle jig saw, vs w/case	149
1587AVSK-50	50th anniv. jig saw kit	156
1587AVSK	top handle jig saw, var sp w/case	149
1613EVS	2 hp var sp plunge router	199
1615EVS	3 1/4 hp plunge router	298
1617	1 3/4 hp router	158
1617EVS	2 hp electronic var. speed router	179
1618	1 3/4 hp D-handle router	169
3107DVSK	5" random orbit sander with case	114
3315K	12v crdls t handle w/2 bat, cs & chrg	158
3615K	14.4v cdls drill kit w/2 batteries	174
3725DVS	5" dustless vs random orbit sander	144
3727DVS	6" dustless vs random orbit sander	148
3915	10" slide compound miter saw	498

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64A	1 1/2 hp tbl saw w/accu fence	745
66	3 hp, 1 ph 10" t.a. saw w/50" fence	1995
66	5 h p, 1 ph 10" t.a. saw w/50" fence	2095
73	1 1/2 hp dust collector	389
75	3 hp dust collector	675
84	combo belt & disc sander	445
412	12 1/2" portable planer	395
471	1 hp dust collector	219

AIRY

EZ2	18 gauge nail/staple kit	109
0249NK	18 gauge brad nailer 3/4"-2" w/case & 5000 nails	108
0232NK	18 ga brad kit 3/8"-1 1/4" with case	68
0566T	angle finish nailer 1"-2 1/2"	202
0626NK	18 gauge narrow crown stapler 3/8"-1 " with case	103
0638S	narrow cr stapler 3/4"-1 1/2"w/cs	179
ITM/ART	0241 & 0626 in one case	119

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Fein

MSXE-636-2	Multimaster triangular sander *includes case, paper asst. & 2 blades* 172
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RYOBI

AP12	12" port. planer	345
DBJ50	detail biscuit jointer	68
DC500K	detail carver kit	62
HT20VSK	multi rotary tool w/cs & accys	48
ML618	18" wood mini lathe	199
OSS450	oscillating spindle sander	149
RE185	2 1/4 hp fixed base vs router	109
SC165VS	16" vs scroll saw	164

HITACHI

C7SBK	7 1/4" circ. saw w/case	109
C8FB2	8 1/2" slide compound miter saw	458
C10FC	10" compound miter saw	198
C10FS	10" slide compound miter saw	698
DN10DYK	9.6V cdls right angle kit	168
DS14DV-G	14.4v kit w/2 bat & free Gerber tool	209
M12V	3 hp var speed plunge router	189
NR83A	full head strip nailer, 2 - 3 1/2 cap	379
NV83A	coil nailer, 2" to 3 1/4" capacity	379
P20SB	3 1/4" planer	89

freud

EB100	edge bander	214
FC107	7 pc carbide forstner bit set	89
JS100	biscuit joiner	94
JS102	biscuit joiner w/var. angle fence	118
FT2000E	3 hp plunge router	184
F410	10" x 40t quiet blade	48
F810	10" x 80t quiet blade	73
LM72M010	10" x 24t flat top rip blade	36
LU82M010	10"x 60t crosscut/rip blade	44
LU84R010	10" x 50T red combo blade	42
LU85R010	10" x 80T red crosscut blade	58
LU92M010	10" x 60 teeth TCH laminate	59
LU98M010	10" x 80 teeth TCH lam & wood	67
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SD308	8" safety dado with case	116
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6213DWAE	12v cordless kit w/ 2 batteries	169
6233DWAE	14.4v cordless kit w/2 batteries	199
6333DWAE	14.4v 1/2" cordless kit	209
BO5001	5" random orbit sander	67
LS1013	10" slide dual comp miter saw	558
LS1211	12" slide dual comp miter saw	789
N1900B	3 1/4" planer	146

Milwaukee

6490-6	10" miter saw	274
6496-6	*new* 10" slide compound miter saw	545
6497-6	10" slide compound saw w/accs	619
6537-22	10 amp recip saw w/case	178

SENCO

SKS	narrow crown stapler	247
SLP20	brad nailer w/cse 5/8"-1 5/8" cap	198
SFN40	finish nailer 1 1/4"-2 1/2" cap	338

DELTA

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14-650	hollow chisel mortiser	238
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36-865	versa feeder stock feeder	248
36-920	Grand Edition 3 hp unisaw	1599 after rebate
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40-540	16" vs scroll saw	179
40-650	Q-3 scroll saw	429
43-505	router/shaper	299
50-840	1 hp dust collector, 650 cfm	219
50-850	1 1/2 hp dust collector, 1200cfm	299
50-860	room air cleaner, 850 cfm	234

DeWALT

DW100	3/8" drill, 0-2500 rpm, w/chuck key	62
DW4PAK	18v kit circ saw, recip saw, hammr drill and light	559
DW309K	recip saw, var sp, w/blades & cs	168
DW321K	top handle jig saw kit	158
DW359K	7 1/4" circular saw w/case	128
DW378G	7 1/4" framers saw	168
DW420	5" random orbit sander, psa	62
DW421	5" dstls rndm orb sander, velcro	67
DW423	5" vs dustls random orbit sander	79
DW431	3" x 21" dstls belt sander var sp	185
DW443	6" rt angld var sp ROS sanderw/h&l	132
DW610	1 1/2 hp router, 9 amp	144
DW621	2 hp vs dstls plunge router	198
DW677K	3 1/4 hp planer kit	149
DW682K	biscuit joiner kit	188
DW705	12" miter saw w/carb blade	358
DW708	*new* sliding comp. miter saw	644
DW733	*new* 12 1/2" portable planer	435
DW744	10" portable table saw	499
DW788	*new* 20" var. speed scrollsaw	448
DW965K	12v right angle drill kit	189
DW972K2	12v crdls kit/w battery & cs	179
DW972KS2	12v combo drill & saw kit	274
DW991K2	DW991K with two batteries	206
DW991KC2	14.4v drill & recip saw combo kit	372
DW991KL2	14.4v drill, circ saw, flashlight kit	349
DW991KS2	14.4V cdls drill & circ saw kit	338
DW995K	18V 1/2" drill w/batt, chrgr & cs	228
DW995KC2	18v drill & recip saw combo kit	395
DW995KS2	18V drill & saw combo kit	377
DW997K	18V hammer drill kit, 1/2" chuck	239
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Have a question?

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Keeping your bits on course

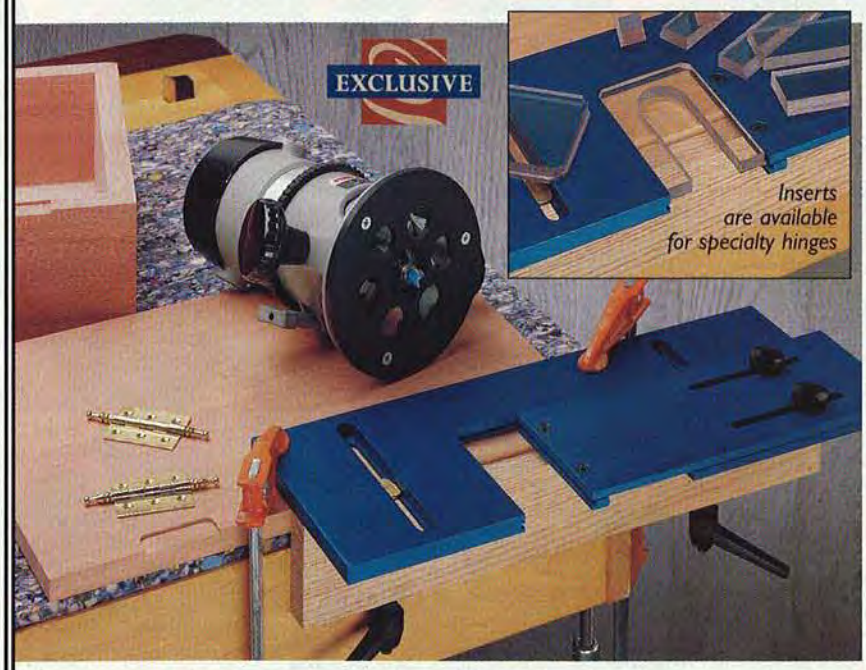
Often, I need to drill holes in the end grain of wooden blanks in order to make pens, light pulls, handles, and other items. Inevitably, the bit wanders, sometimes as much as ⅛" off course. Can you give me any tips on drilling a straight hole?

—Dave Ulrich, Raleigh, N.C.

The problem with drilling out pen blanks, Dave, occurs because the grain of the wood tries to redirect the bit. Bob McFarlin, one of our tool testing experts, solved this problem by switching to Black & Decker Bullet bits. The design of these bits help them drill true and not wander off the start mark. Bob also recommends the simple jig shown *right* specifically designed for drilling pen blanks. To get the pen-drilling jig for $14.95 (plus shipping), call Hut Products for Wood at 573/442-1918.

Continued on page 94

Rout perfect hinge mortises in seconds!



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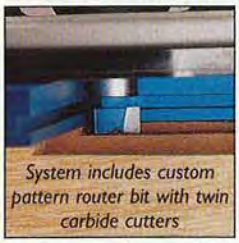
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DA250A **15G 1"-2½" Finish** ..$234.90
FN 250A **16G ¾"-2½" Finish** ..$183.00
NS150 **18G ⅝"-1¼" Crown Stapler** $168.00
FC350 **Clipped Head 2"-3½" Framing Nailer Kit** $287.00
FR350 **Full Round Head 2"-3½" Framing Nailer Kit** $287.00
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690 **1½ HP Router**.....$142.00
691 **1½ HP HDL Router** $159.00
693 **Plunge Base Router** $178.00
6931 **Plunge Base Only** ...$82.00
6911 **D-Handle Base Only** ..$72.00
7539 **3-1/4 HP Plunge Router** - Plus Free Fine Depth Adjuster ($26.50 Value) $294.90
7518 **3-1/4 HP 5SP FB Router** $279.90
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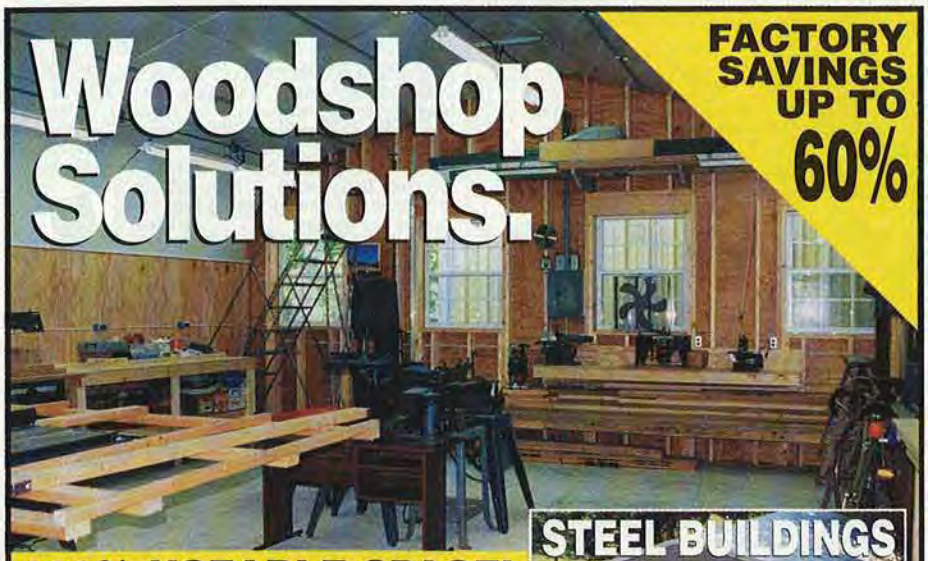

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ASK WOOD

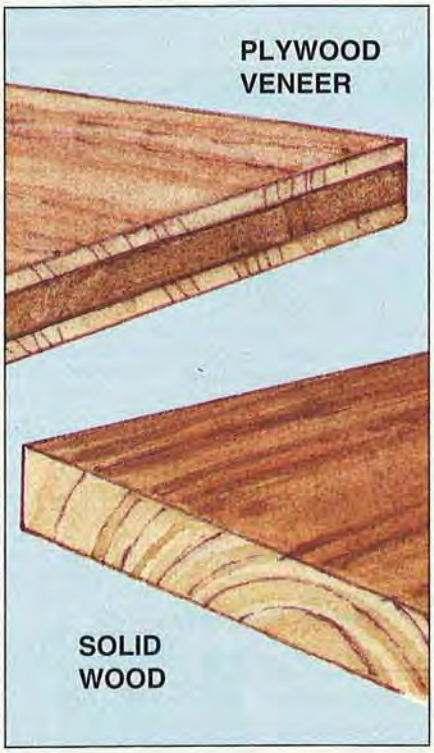
Continued from page 92

It's the same wood, but stains differently

I recently built a lectern for a church using red oak and red oak plywood. When I applied natural Danish oil finish, the plywood remained much lighter than the solid wood. Why does this happen and what can be done to solve the problem?

—Jack Horrocks, Cincinnati, Ohio

It happens, Jack, because solid wood and plywood veneer are cut differently, and hence have different porosities. Solid wood is more porous than veneer, so it soaks up more finish and, consequently, more color. Since you've already sealed both the wood and the plywood, your best bet is to even out the color difference with a pigmented surface coating such as varnish or lacquer. Experiment with sealed scraps of plywood until you get a hue that matches the solid wood. If a future project calls for "marrying" plywood and solid stock, try staining with an aniline dye or gel stain; these let you control color by the amount you wipe off.



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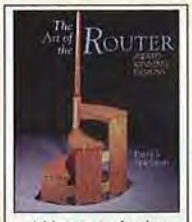

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By Patrick Spielman, *author of The Art of the Router and more than 50 other woodworking books.*

How smooth is the carbide on a Jesada tool? So smooth, so precise and so highly-polished that you'll have to see it to believe it! Jesada bits and cutters were recently tested for the quality of the carbide surface's finish. The results were comparable to the finest polished glass mirrors, and that's a finish you will not find anywhere in the industry.

655-502
Jesada's 1/2" shank, 2" diameter **Lock Miter Junior** Bit joins wood 3/8" to 11/16" thick.
List: $84.90
Sale: $69.40

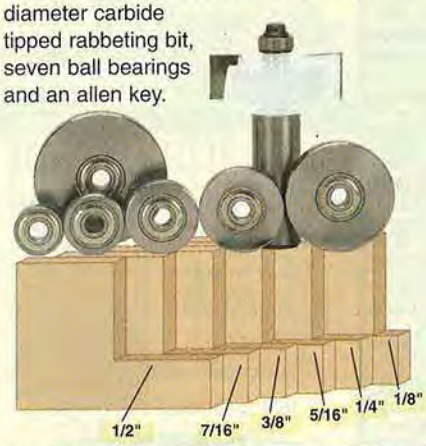
How does Jesada achieve such a superb finish? It takes a combination of the right tools, the right techniques and above all, patience. Jesada has made a huge investment in the finest grinding equipment available anywhere: the 5-axis computerized grinder. They've equipped these machines with the highest quality diamond grinding wheels. They use only a 100% oil-based coolant as opposed to the more common water-based coolants. And they take their time, lots of time!

The Rabbeting bit shown below is a great example. This bit takes about 4-1/2 minutes to grind to a mirror finish. Jesada's competitors may take as little as 45 *seconds* on a rabbeting bit. That may make their bit cheaper than Jesada's, but the difference shows up in the performance of the tool. First, a polished surface allows for a finer cutting edge, so Jesada bits cut cleaner and longer than tools with a more-coarse finish. Second, the highly polished surface sheds most of the pitch and gum that would cling to the imperfections of a coarse surface. Could Jesada grind the bit in 45 seconds? Sure, but they would never be satisfied with the results, and I don't think you would be either.

Jesada bits take up to 6 times as long to grind as our competitors' bits, but the difference shows in the performance. Of course, Jesada bits have lots of other features too!

Is a mirror finish worth all this extra effort? I'm sure that it is, but I think you should convince yourself. Why not try one of the specially-priced sets on this page.

Jesada's **Rabbet-Master Plus™ Set** would be an ideal choice. This set cuts rabbets from 1/8" to 1/2" deep & flush trims as well! The set includes an 1-3/8"-diameter carbide tipped rabbeting bit, seven ball bearings and an allen key.

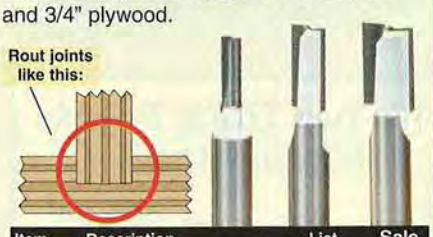


Item	Description	List.	Sale
600-639	1/4" Shank Rabbet-Master Set	$51.30	**$38.90**
600-640	1/2" Shank Rabbet-Master Set	$53.90	**$39.90**

Perhaps you're one of thousands of woodworkers who already have a Rabbet-Master Plus™ Kit, or maybe you just need a different selection of bits. You can evaluate Jesada quality with a money-saving **Three-bit Set**. These sets include three of Jesada's most popular bits at about half the regular catalog price. You'll get a 1/4" radius Roundover, 1/2" diameter Straight and a Flush Trim bit with micrograin carbide edges, mirror-finish grinding and Jesada's white PTFE coating.

Item	Description	Reg.	Sale
600-701	1/4" Shank 3-bit Set	$69.60	**$34.90**
600-702	1/2" Shank 3-bit Set	$72.70	**$36.90**

Or choose one of Jesada's **Ply-Groove™ Sets** These sets are the solution to the problem of sloppy plywood joints. Use 23/32" bits for 3/4" plywood, 31/64" for 1/2" and 15/64" for 1/4". Each set includes bits that match up to the real size of 1/4", 1/2" and 3/4" plywood.



Item	Description	List.	Sale
600-624	1/4" Shank Ply-Groove Set	$61.20	**$45.90**
600-625	1/2" Shank Ply-Groove Set	$65.90	**$49.90**

Whatever bits you choose, I think you'll agree that Jesada quality makes old fashioned bits obsolete!

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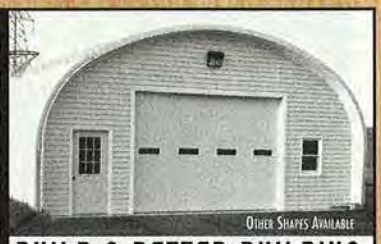

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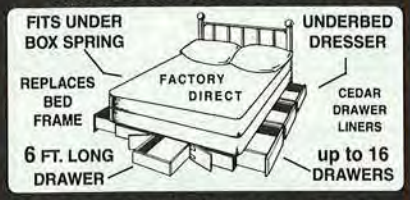

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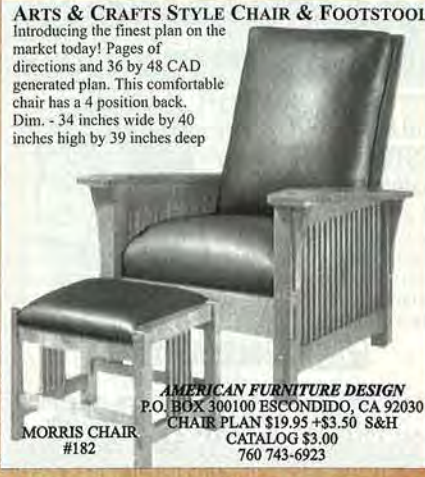

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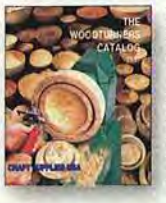

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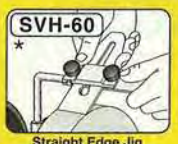

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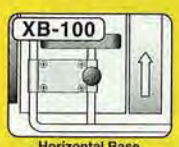

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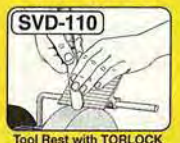

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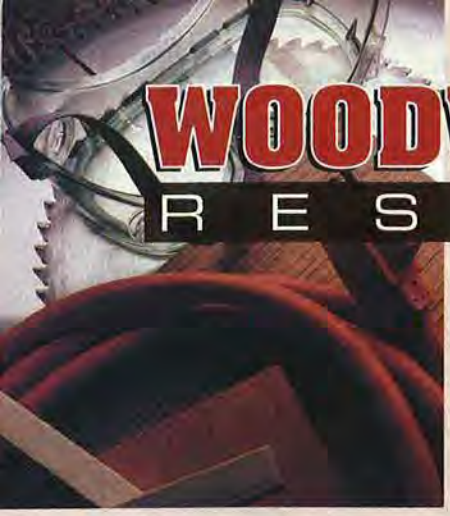

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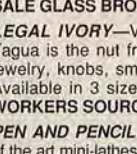

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Whether you install cabinets just occasionally or do it for a living, you'll want at least a couple of these in your toolbox. Sorry, Pony, you can't have these back.

—Tested by Dave Henderson

PRODUCT SCORECARD

Pony 8510 Cabinet Claw

Performance	★ ★ ★ ★ ★
Price	$60 for two
Value	★ ★ ★ ★ ★

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Continued on page 108

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SHOP TESTED

Continued from page 106

No-hammer punches, nail sets spring to aid

Centerpunching a drill mark is a simple task made simpler—and hammerless—when you use one of Noxon's Spring Line Tools. Simply hold the point of the Spring Line centerpunch against the surface you want to mark, pull up the top, stretching the spring that's the middle of the tool, then let go of the top. The spring snaps it down against the punch. It's that easy.

And with the centerpunch shown in use *below*, that's only half the story. The top part doubles as a 2/32" nail set. Noxon calls these two-ended tools Two-Bit Snappers.

I tried four hammerless tools—a pair of Two-Bit Snappers (the centerpunch/nail set combo and one with two nail sets—1/32" and 2/32"), a self-centering brad setter, and a self-centering centerpunch (handy when you need to mark screw holes centered inside hardware holes). In my tests, the tools proved easy to use and effective. The spring can give a surprisingly stout blow, but it was a cinch to modulate the striking strength.

The tools I tested came packaged as a set—tagged the Woodworking Assortment. The tools are also available individually.

—Tested by Larry Johnston

PRODUCT SCORECARD

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Performance	★ ★ ★ ★ ★
Price	WWA996 Assortment, $37.06; tools from $8 each, plus shipping.
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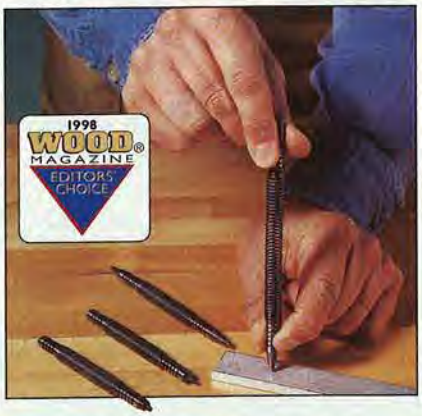

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JJ-6CSXW 6" long bed jointr469*
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LT8300P 26 x opt. transit 599

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1587AVSK VS Top Handle Jig Saw w/Case $154

1584VSKbarrel jigsaw w/case 164
1634VSK vs recip saw kit 184
3107DVSK 5" rndm sndr kit 119
3107DVS dstls rdm orb sndr kt99
3315K 12v T-handle w/2 bat 159
3615K 14.4v 3/8" vsr 2/bat 179

11224VSR 7/8" Bulldog SDS Rotary Hammer $219

11304 Brute breaker hammr1249
1194VSRK1/2" hmr drill w/cs 159
1276DVS4x24 vs belt sander 229
1275DVS 3x24vs sndr w/bg 214
1274DVS 3x21 vs sndr w/bag 169
1617EVS 2p vs router 189
1618B 1-3/4hp D-hndl router 179

1613EVS 2 HP, VS, Microfine Plunge Router $189

3725DVS 5" H&L vs sander 144
3727DVS 6" H&L vs sander 149
B3915 10" slide compnd saw 499
1609KX laminate trimmer kit 229
3296K 3-1/4" planer kit 179

DEWALT

DW708K 12" Sliding Dual Compound Miter Saw $649 (Includes Dust Bag)

DW733 12-1/2" port planer 429
DW788 20" vs scroll saw 399
DW744 10" port table saw 499

DW995KS-2 18 Volt Contractors Combo Kit $389

DW995KC-2 18v drill/recip kit 399
DW938K 18v recip saw kit 269
DW936K 18 v crdls saw kit 249
DW935K 14.4 cdls saw kit 229
DW621 2hp vs plng router 199
DW625 3hp vs plunge router 289
DW673K laminate trimmer kit 169

DW321K VS Jigsaw With Case $164

DW705 12" cmpnd mitr saw 349
DW364 7-1/4" saw w/brake 159
DW677K 3-1/8"planer w/case 159
DW378G 7-1/4" framing saw 169
DW309K 10 amp recip saw 179
DW965K 12 volt RA drill kit 189

DW682K Plate Jointer Kit $189

DW421K 5"h&l rand sndr w/cs 74
DW423K5"vs rndm sandr w/cs 89
DW443 6" RA H&L rdm sndr 139
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DW995K 18 Volt 1/2" VSR Drill Kit $229 (KIT BOX INCLUDED)

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SFN40K 1-1/2 - 2-1/2 Finish Nailer $349

SFN-1 Plus 1"-2" finish nailer 299
SN65 full hd stick nailer 379
SLP-20 5/8"-1-5/8" brd nal kt 229
SLS20 finish staplr w/cs 249
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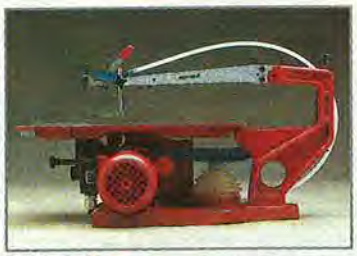

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DELTA TOOLS

Model	Description	List	Sale
50-860	NEW 850 CFM Air Cleaner	Sale	239
31-695	6" Belt/9" Disc Sander	441	299
23-710	New Sharpening Center	217	145
23-680	6" Bench Grinder 1/4 HP	80	69
31-460	4" Belt/Disc Sander	198	119
40-560	16" 2 speed Scroll Saw	230	155
40-540	16" var/spd Scroll Saw	249	179
11-990	12" Bench Drill Press	255	184
11-090	32" Radial Bench Drill Press	405	279
43-505	1/2" Bench Router/Shaper	398	299
22-540	12" Bench Top Planer	Sale	259
28-195	10" Band Saw	390	309
22-560	12-1/2" Planer w/ extra knives		329
36-865	Versa Feeder Stock Feeder		259
36-220	10" Compound Mitre Saw	294	199
28-185	Bench Band Saw	213	168
36-240	10" Sliding Mitre Saw	589	439
37-070	6" v/spd Bench Jointer	351	265
14-650	Hollow Chisel Mortiser	380	239
33-990	10" Radial Arm Saw	981	799
17-900	16-1/2" Floor Drill Press	490	349
36-285	8-1/4" Builders Saw w/ stand	Sale	268
36-210	10" Compound Mitre Saw	344	199
34-555	Sliding Table	487	289
36-250	10" Slide Compound Saw	825	449
31-780	Oscillating Spindle Sander	253	194
31-780K	31-780 w/ 31-781 spindle set		209
46-700	12" Wood Lathe	575	465
40-650	Q3 18" Scroll Saw	Sale	389
36-905	30" Unifence	346	255
36-906	50" Unifence	444	325
34-444	10" Contractors Table Saw	Sale	579

The following tools have a $50.00 rebate ! Price shown is before rebate.

36-455	10" Contractors Table Saw w/ 30" unifence, cast iron wing, 34-914 table board, & carbide blade	Sale	839
22-675	DC380 15" Planer	Sale	1175
28-275	14" Band Saw 3/4 HP	Sale	595
28-280	14" Band Saw 1 HP motor with enclosed stand	Sale	739
28-280Z	14" Band Saw 1 HP w/ 50-274 mobile base, 28-843 rip fence, & 28-266 cool blocks	Sale	839
31-280	Sanding Center w/ stand	Sale	789
37-190	6" Deluxe Jointer	603	445

NEW Single Stage Dust Collectors

50-850	1-1/2 HP, 1200 CFM	Sale	309
50-851	2 HP, 1500 CFM	Sale	455

MILWAUKEE TOOLS

6527	NEW Sawzall with case	343	169
6537-2	6527 w/quick lok blade change	224	175
0407-22	12V Drill w/kyls chuck&2 batt	380	175
0224-1	3/8" Drill 4.5 amp magnum	236	132
0234-6	1/2" Drill 4.5A mag 0-850 rpm	255	134
0235-1	1/2" Drill w/keyless chuck	255	142
0244-1	1/2" Drill 4.5A mag 0-600 rpm	255	134
0222-1	3/8" Drill 3.5 amp 0-1000 rpm	213	119
0228-6	3/8" Drill 3.5 amp 0-1000 rpm	207	109
0375-1	3/8" close quarter Drill	255	148
0379-1	1/2" close quarter Drill	288	165
6546-6	cdls Scrwdvr 200 & 400 rpm	150	89
6547-6	6546-1 w/bits,1/4" chuck & cs	185	108
5399	1/2" D-hdle Hammer Drill Kit	356	219
5397-1	3.8" v/ spd Hammer Drill Kit	275	145
5371-6	1/2" v/ spd Hammer Drill Kit	360	194
3107-6	1/2" v/spd right angle Drill Kit	411	234
3300-1	1/2" v/ spd right angle Drill	378	219
6142	4-1/2" Grinder w/cse & acc.	224	129
6490-6	10" Mitre Saw	496	265
6491	6490 w/ carbide blade & bag	594	328
6494-6	10" Compound Mitre Saw	585	315
6266-6	Top Handle Jig Saw	315	159
6496-6	10" Slide Compound Saw	1050	569

FREUD CARBIDE TIPPED SAW BLADES
5/8" Bore - Industrial Grade

Item	Description	Teeth	List	Sale
LU72M010	Gen Pur. A.T.B.	10" 40	69	42
LU82M010	Cut-off	10" 60	93	44
LU84M011	Comb	10" 50	78	45
LU85M010	Super Cut-off	10" 80	115	59
LM72M010	Ripping	10" 24	69	38
LU73M010	Cut off	10" 60	84	49
LU87M010	Thin Kerf	10" 24	72	45
LU88M010	Thin Kerf	10" 60	88	49
LU98M010	Ultimate	10" 80	128	68
LU91M010	Compnd Mitre	10" 60	88	54
F410	Quiet Blade	10" 40	95	49
SD308	8" Dado - Carbide		230	119
SD508	8" carbide w/case & shims		344	168
FB100	16 piece Forstner Bit Set		338	194
94-100	5 pc. Router Bit Door System		320	169
FT2000E	Plunge Router		Sale	189
JS102	Biscuit Jointer		Sale	119

HITACHI TOOLS

C8FB2	8-1/2" Slide Compound Saw	1169	449
C10FS	10" Slide Compound Saw	1627	699
C15FB	15" Mitre Saw	1346	645
NV45AB	Coil Roofing Nailer	935	379
C10RA	NEW 10" Table Saw	632	319

MAKITA TOOLS

Model	Description	List	Sale
5090DW	3-3/8" Saw Kit 9.6 volt	280	155
DA391D	3/8 angle Drill 9.6V	166	114
DA391DW	3/8" angle Drill Kit 9.6V	341	189
ML902	Incandescent Flashlight 9.6V		14.95

5095DWE	9.6 volt Drill Kit w/2 batt	Sale	125
6095DWLE2	6095DWE w/flashlight	Sale	139
6095D	6095DW Drill only & cse	Special	65
632007-4	9.6 volt Battery	47	30
632002-4	7.2 volt Battery	39	28
6203DWAE	9.6V 3/8" Drill Kit w/2 batt	351	159
6211DWHE	12V 3/8" Drill Kit w/2 batt	368	175

CORDLESS DRILLS
WITH 2.0 AMP HIGH CAPACITY BATTERIES

6213DWAE	12V 3/8" Drill Kit	325	169
6233DWAE	14.4V 3/8" Drill Kit	358	205

9900B	3"x21" Belt Sander w/bag	347	179
9924DB	3"x24" Belt Sander w/bag	360	189
N1900B	3-1/4" Planer with case	263	142
1912B	4-3/8" Planer	352	205
N9514B	4" Disc Grinder 4.6 amp	118	65
DA3000R	3/8" Angle Drill	355	185
2708W	8-1/4" Table Saw	637	295
6405	3/8" Drill Rev. 0-2100 rpm	115	65
6013BR	1/2" Drill Rev. 6 amp	270	159
9401	4" x 24" Belt Sander w/bag	458	235
5007NB	7-1/4" Circ Saw w/ case	250	125
LS1011	10" Slide Compound Saw	995	429
LS1211	12" Slide Compound Saw	1620	695
3901	Plate Joiner Kit	376	209
3612C	3 HP Plunge Router	492	269
LS1040	10" Cmpnd Miter Saw	460	259
LS1013	10" Dual Compound Slide Miter Saw	1088	599
BO5010	5" Random Orbit Sander	142	72
LS1220	NEW 12" Compound Miter Saw	379	
9227C	NEW 7/9" Polisher	350	195
SJ401	NEW 16" Bench Scroll Saw	300	175

SENCO AIR NAILERS

SFN1+	Finishing Nailer 1 - 2" w/ cs	448	299
SN325	Nailer 1-7/8 - 3-1/4"	665	365
SLP20	Pinner w/cs 5/8 -1-5/8"	422	229
SKS	Stapler 5/8 - 1-1/2"	390	279
SN70	Framing -Clip Hd 2 - 3-1/2"	725	449
SN65	Framing -Full Hd 2 - 3-1/2"	709	379
SN600	NEW Framing 2 - 3-1/2"	699	369
SFN40	Finish Nailer 1-1/4 - 2-1/2"	569	349

NEW Accuset Nailers by SENCO

A100LS	Finish Stapler 1/2" - 1"	180	119
A150LS	Finish Stapler 1/2" - 1-1/2"	220	149
A125BN	Brad Nailer 5/8" - 1-1/4"	160	99
A200BN	Brad Nailer 5/8" - 2"	215	139

BOSTITCH AIR NAILERS

Model	Description	List	Sale
N80S-1	Stick Nailer	Super Sale	325
RN45	Coil Roof Nailer 3/4 - 1-3/4	845	359
N60FN-2K	Finishing Nailer w/ case	557	275
BT35-2K	Brad Tacker 5/8" - 1-3/8" with case, oil, & brads	279	125
CWC100	1 HP Pancake Compressor	440	305
MIIIFS	Flooring Stapler 15 gauge	902	529
S32SX-1K	Finish Stapler-1/2" - 1-3/8" with case & oil	269	145

JORGENSEN ADJUSTABLE HANDSCREWS

Item#	Jaw Length	Opening Capacity	List	Sale	Box of 6
#0	8"	4-1/2"	20.35	12.10	66.95
#1	10"	6"	23.30	12.90	71.95
#2	12"	8-1/2"	26.75	14.90	83.95
#3	14"	10"	33.85	18.55	105.75

PONY CLAMP FIXTURES

Model	Description	List	Sale	Lots of 12
50	3/4" Black Pipe	15.45	3.50	92.50
52	1/2" Black Pipe	12.65	6.95	74.95

PANASONIC CORDLESS

EY6100FQKW	12V 3/8" Drill kit w/ 2 Ironman batteries, 15 min. charger, & case	379	179
EY6101FQKW	12V 1/2" Drill w/ 2 Ironman batteries, 15 min. charger, & case	324	199
EY6230FQKW	NEW 15.6V Drill Kit with 2 Ironman batteries, 30 minute charger & case	425	209
EY3503FQWKW	NEW 5-3/8" 12V Wood Cutting Saw Kit	500	259

BIESEMEYER FENCES

B-50	50" Commer. Saw	443	325
T-SQUARE 52	52" Homeshop	360	275
T-SQUARE 40	40" Homeshop	335	255
T-SQUARE 28	28" Homeshop	325	245

AIRY AIR NAILERS

Model	Description	List	Sale
0241SK	Brad Nailer 3/8" - 1-9/16"	180	98
0626SK	1/4" Crown Stapler 3/8" - 1"	194	98

Above nailers come w/case, fasteners, oil & wrenches

0241/0626
0241 Brad Nailer, 0626 Stapler, case, fasteners, oil, & wrenches
Super Sale 129.95

STABILA LEVELS

25010	10" die cast Torpedo Level	43	29
24640	24" Level w/ hand holes	62.20	43
24670	48" Level w/ hand holes	79.70	58
24610	48" Level w/ angle setter vial	80	59

DEWALT TOOLS

Model	Description	List	Sale
DW309K	NEW Recipro Saw 10 amp.	318	169
DW378G	NEW 7-1/4" Framer's Saw	210	169
DW222	3/8" Drill, 0-1200 rpm, 6.7 amp	184	99
DW231	1/2" Drill, 0-850 rpm, 7.0 amp	240	129
DW236	1/2" Drill, 0-850 rpm, 7.8 amp with keyless chuck	264	149
DW124K	1/2" right angle Drill	590	329
DW321K	Top Handle Jigsaw Kit	300	164
DW364	7-1/4" Circ. Saw w/brake	294	162
DW610	1-1/2 HP 2 handle Router	266	149
DW411K	1/4 sheet Palm Sander w/ cse	88	58
DW682K	Biscuit Joiner with case	448	199
DW705	12" Compound Mitre Saw	734	359
DW621	2 HP Plunge Router	400	218

DW621 comes with Free DW6956 fine height adjuster !

DW675K	3-1/8" Planer with case	292	164
DW677K	3-1/4" Planer w/ case	268	155
DW431	3 x 21 v/spd Belt Sander	338	188
DW421	5" Palm Ran. Orb Sander	144	74
DW423	Palmgrip Random Orbit Sander - variable speed	170	94

DW421 & DW423 come with Free DW4317 case !

DW673K	Laminate Trimmer Kit	364	188
DW272	Drywall Gun, 0-4000, 6.3 amp	160	95
DW276	Drywall Gun, 0-2500, 6.5 amp	160	95
DW935K	14.4V 5-3/8" Trim Saw Kit	444	237

DEWALT CORDLESS DRILLS

DW952K-2	3/8" v/spd w/ two 9.6V XR batteries	284	129
DW972K-2	3/8" variable speed w/ two 12V XR batteries	362	182
DW972KQ-2	Above drill kit with 15 minute charger	Sale	229
DW991K-2	3/8"variable speed w/ two 14.4V XR batteries	415	209
DW991KQ-2	Above drill kit with 15 minute charger	Sale	245
DW994KQ	1/2" variable speed w/ one 14.4V XR batteries	458	239

Above drill kits come w/ charger & steel case !

DW991KS-2	DW991K drill, DW935 trim saw, 2 XR batteries & case	Sale	345

DEWALT 18 VOLT CORDLESS TOOLS

DW938K	Recipro Saw Kit	520	269
DW995K	1/2" Drill Kit	428	229
DW997K	1/2" Drill/Hammer Drill Kit	454	249
DW936K	5-3/8" Saw Kit	458	249
DW995KS-2	DW995K Drill, DW936 Saw and case	Sale	385
DW991KC-2	DW991K 14.4V drill kit, DW937 14.4V recipro saw,& case	375	
DW995KC-2	DW995K 18V drill kit, DW938 18V recipro saw, & case	395	
DW997KC-2	DW997K 18V drill kit, DW938 18V recipro saw, & case	415	

DEWALT BENCH TOP TOOLS

DW708	12" Dual Compound Slide Mitre Saw	Sale	649
DW788	20" Scroll Saw	Sale	469
DW733	12" Planer	Sale	435
DW744	10" Portable Table Saw	Sale	499
DW756	NEW 6" Bench Grinder	164	75
DW758	NEW 8" Bench Grinder	184	115

BOSCH

Model	Description	List	Sale
1587VS	Top Handle "CLIC" Jig Saw	292	139
1587AVSC	1587VS Saw Kit with case and *New* Progressor blades	Sale	149
1584VS	Barrel "CLIC" Jig Saw	288	139

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Bosch 30 blade assortment for Jig Saws 29.99

1584VS or 1587VS
with steel case and 30 Bosch blades Sale 175

1295DH	5" Random Orb Palm Sndr	145	89
1274DVS	3"x21" v/spd Belt Sander	301	175
1278VSK	1-1/2"x12" Belt Sander	218	129
1275DVS	3"x24" v/s Belt Sndr	379	214
1276DVS	4"x24" v/s Belt Sndr	408	229
1194VSR	1/2" v/ spd Hammer Drill	272	155
1194VSRK	above Drill w/ case	303	169
1604A	1-3/4 HP 2 Handle Router	269	142
1613EVS	2HP v/s Plunge Router	369	199
1615EVS	3 HP v/s Plunge Router	536	305
1634VSK	Recip Saw 10.5 amp	335	185
3315K	12V T-handle Drill Kit	345	159
3615K	14.4V Drill Kit	354	174
3107DVS	5" Random Orbit Sander	165	98
3107DVSK	3107DVS with case	195	115
3725DVS	5" Random Orbit Sander	256	145
3727DVS	6" Random Orbit Sander	266	149
B3915	10" Slide Compound Saw	1050	559
3912	NEW 12" Compound Mitre Saw	638	359
1124VSR	7/8" SDS Rotary Drill	404	229
1703AEVS	5" Grinder - 8.5 amp	245	139

Introducing the NEW Bosch Routers

1617	1-3/4 HP Router - 2 handle	Sale	169
1617EVS	2 HP Router w/ variable speed - 2 handle	Sale	189
1618	1-3/4 HP Router - "D" handle	Sale	179

PORTA NAILER

401	Porta Nailer complete	295	209
501	Face Nailer complete	295	209

DAVID WHITE

LP6-20	Sight Level package - 20x	329	215
LP6-20XL	LP6-20 w/9056 tripod & 7620 rod		275
LT8-300	Level Transit - 26x	739	489
LT8-300P	above Level w/ optical plum	869	569
LT6-900	Level Transit - 20x	419	279
ALT6-900A	Auto Level - Transit -18x	666	455
ALTP6-900	above Level with tripod & rod	799	525
AL8-22S	Automatic Level - 22x	583	295
AL8-26S	Automatic Level - 26x	854	325

JET TOOLS

JJ60S	6" Jointer - open stand	Sale	429
JJ6CSX	6" Jointer - closed stand	Sale	489
JJ8CS	8" Jointer - closed stand	Sale	1189
JWP124P	12" Benchtop Planer	Sale	339
JWBS14OS	14" Band Saw 3/4 HP - open stand	Sale	499
JWBS14CS	14" Band Saw 1 HP - closed stand, rip fence & mitre gauge	Sale	545
JWTS10JF	10" Contractor Table Saw with 30" Jet fence 1-1/2 HP	Sale	599
JWTS10CWPF	10" Contractor Table Saw with 30" Exacta fence 1-1/2 HP	Sale	749
JTAS10X501	10" Tilting Arbor 3 HP Table Saw with 50" Exacta fence, table board & legs	Sale	1399
JDP17MF	16-1/2" Drill Press 3/4 HP - 16 speed. Comes with mortise attachment & bit set	Sale	449
DC-650	Dust Collector, 1 HP, 650 CFM	319	219
JWP-15HO	15" Planer with stand	1699	1229

PORTER CABLE

9444	Profile Sander Kit	220	99
9444VS	Var/spd Profile Sander Kit	207	115
690	1-1/2 HP Router 8 amp	278	149
6931	Plunge Router Base	139	82
693PK	690 and 6931 plus case	Sale	199
9690	690 Router with case	Sale	159
691	1-1/2 HP Router D-handle	303	164
693	1-1/2 HP Plunge Router Base	338	184
697	1-1/2 HP Router/Shaper	418	235
698	Heavy Duty Shaper Table	238	135
352VS	3x21 v/s Belt Sander w/bag	321	175
9352VS	Above sander with case	Sale	189
360	3"x24" Belt Sander w/ bag	397	214
360VS	360 Sander w/ variable speed	429	229
362	4"x24" Belt Sander w/ bag	412	224
362VS	362 Sander w/ variable speed	446	239
9125	3-1/4" Planer Kit w/ case	250	145
9118	Porta Plane Kit 7 amp	400	235
505	1/2 sheet Pad Sander	249	139
97549	Top handle Jig Saw 4.8 amp w/ case & blades	275	144
330	Speed Block Sander 1/4 sheet	120	68
556	Biscuit joiner w/5556 fence .	Sale	135
557	NEW Plate Jointer with tilt fence. Includes 2" & 4" blades for use with standard & face frame plates	400	199
7519	3-1/4 HP Router 2 Handle	469	258
7518	3-1/4 HP 5 speed Router	534	289
7539	3-1/4HP v/spd Plunge Router	534	289
7310	5.6 amp Laminate Trimmer	176	102
97310	Laminate Trimmer Kit comp	336	189
7335	5" Random Orbit Sander	254	139
97355	7335 w/ case & dust pick-up	274	149
7336	6" Random Orbit Sander	259	145
97366	7336 w/ case & dust pick-up	284	159
332	Palm Grip Rndm Orb Sander	133	59
333	above sander with dust bag	148	65
333VS	NEW Random Orbit Sander - variable speed	150	79
334	333 Sander with PSA pad	148	65
335	Palmgrip Random Orbit Sander with dual flip pad	Sale	85
310	Production Lam. Trimmer	270	154
347K	7-1/4" "Framers" Circ Saw with plastic case	250	129
743K	7-1/4" "Framers" Circ Saw with case - left hand version	250	129
9737	Tiger Recipro Saw	307	158
9543VS	NEW Top Handle Jig Saw	300	175

New Porter Cable Cordless Nailers !

CDA250	Angle Finish Nailer 1-1/4" to 2-1/2"	500	279
CFN250	Finish Nailer 1" to 2-1/2"	500	279
CMS200	Medium Crown Stapler 1" to 2"	500	279

Porter Cable Pneumatic Nailers

BN125	Brad Nailer -18 ga. 5/8"- 1-1/4"	144	89
BN200	Brad Nailer -18 ga. 3/4"-2"	238	139
FN250A	Finish Nailer -16 ga. 1"-2-1/2"	362	189
DA250A	Nailer -15 ga. 1-1/4"-1-1/2"	412	235
FC350	Framing Nailer - clipped head	558	289
FR350	Framing Nailer - round head	558	289
RN175	Roofing Coil Nailer	504	289

Porter Cable Compressors

CF1400	1 HP, 4 gal. Pancake	Sale	195
CF1540	1-1/2 HP, 4 gallon Side Stack	Sale	295
CF2400	2 HP, 4 gal. Side Stack	Sale	319

Porter Cable Cordless Drills

9862	12V Drill Kit w/ 2 batteries	382	159
9862F	9862 Drill Kit with flashlight	Sale	169
9872	14.4V Drill Kit w/ 2 batteries	424	189

FREE FREIGHT TO THE CONTINENTAL STATES ON EVERY ITEM • GIFT CERTIFICATES NOW AVAILABLE

Where are all the sawmills?

If you've never visited a sawmill but would like to, here's the perfect locator. *The American Sawmill Directory* lists over 3,500 sawmills across the United States and Canada, plus distributors and indexing by species. The 300-plus page book is published annually by *Southern Lumberman Magazine*, a publication serving the forest products industry since 1881.

There's a catch, though. The only way you can get the 1999 directory is by ordering a year's subscription to the magazine (12 issues). To get on the list to receive a directory, send $21 U.S. or $38 Canadian, to *Southern Lumberman Magazine*, 128 Holiday Court, Suite 116, Franklin, TN 37067.

Bosch finds oldest jigsaw

Last year marked the 50th anniversary of the jigsaw's introduction to U.S. woodworkers by Bosch Power Tools. Invented in 1946 by an employee of the Swiss company Scintilla AG, the jigsaw first went into production in 1947 under the Scinta and then Lesto brand names. Eventually, Bosch acquired a majority share of Scintilla and began selling its jigsaw in 1954. Company officials say that since then more than 20 million Bosch jigsaws have been sold, but they wanted to find some of the early models.

Bosch's yearlong search for the oldest jigsaw turned up many veterans. But the 48-year-old, still-operational jigsaw shown *above,* owned by Lee Wright, of Grand Rapids, Michigan, was determined the eldest. The lead carpenter for the Grand Rapids' public schools, Lee originally bought the jigsaw at a local hardware store. In exchange for the jigsaw, which will go on permanent display at Bosch's Chicago headquarters, the carpenter received a year's supply of Swiss chocolate, a state-of-the-art Bosch jigsaw, and a Swiss watch.

Bosch Power Tools awarded the prize for oldest jigsaw to the owner of this nearly 50-year-old Scinta jigsaw, which still works.

Elder woodworking that pays for itself

Bill Boardman, a *WOOD*® magazine reader and resident of Friendship Village, a Schaumburg, Illinois, retirement community, wrote to tell us about what he and his 30 or so woodworking buddies have going for themselves.

"We have 800 residents here, more women than men, naturally," he penned, "and most of them brought their own household goods with them. This means that a lot of things need fixing, and that's where we come in. We repair any item within the scope of our expertise—from furniture to toasters—and charge only for materials plus a requested donation to the Fix-It-Shop.

"That donation, plus what we make and sell at resident craft shows, keeps us in saw blades, sanding belts, screws, and an occasional piece of new equipment. This enables us to do our own woodworking projects for just the cost of materials."

Bill had another reason for writing, though. "Perhaps this information will encourage other retirement facilities throughout the country to get involved in something like this. The management here thinks so highly of our shop that they have just completed a new building for us. The shop is also a good sales tool for prospective residents."

Management covers the energy bills for the Fix-It-Shop, and participants sign waivers of liability. But according to Bill, it was up to his friends and him to furnish the start-up tools, as well as maintain them.

Bill Boardman puts the final polish on one of several tray tables he built in his Illinois retirement community's woodworking shop.

Photographs: Courtesy of Bosch Power Tools; Friendship Village

The Freedom Of A Hammer, The Power Of A Pneumatic℠

BAMMER™

No Cord, No Hose, No Compressor... No Problem!

Three Models Perfect For The Job At Hand

CDA250 Cordless Angle Finish Nailer
15 Ga., 1 1/4"- 2 1/2"

CFN250 Cordless Finish Nailer
16 Ga., 3/4" - 2 1/2"

CMS200 Cordless Medium-Crown Stapler
16 Ga., 7/16"crown 1"- 2"

No Regular Maintenance

The amazing oil-free piston and cylinder design keep carbon deposits to a minimum, delivering shot after shot without the need for maintenance and downtime. Plus there's no messy oil to spoil finish work.

No Complicated Fuel System

Bammer's pressurized fuel is injected into the engine as a gas. Together, the easy-load cartridge and heavy-duty two stage fuel regulator and fuel injection valve supply a smooth and consistent flow of fuel to the engine. The fuel is ignited instantaneously by 18 fingers of fire from the pre-combustion chamber, making every shot consistent and powerful. This helps you nail longer, up to 3,000 shots per cartridge, and into the hardest material.

No Batteries, No Motor, No Fan.

Piezo ignition eliminates batteries and complicated electronics. You generate the spark when you pull the trigger for consistent, trouble-free and uniform firing. Manual recycling means more reliable operation and lower costs.

To experience the freedom and power of the Bammer, visit your local Porter-Cable retailer. Or call 1-800-487-8665 (519-836-2840 in Canada) for the dealer nearest you.

PORTER-CABLE

INNOVATION THAT WORKS

http://www.porter-cable.com

WANTED REWARD

Wanted for sawing, planing, drilling, molding and jointing in all 50 states. JET's band of woodworking tools was last seen in the company of the legendary contractor's style tablesaw. Anyone with information leading to the purchase of these tools is advised to follow the stampede to your local JET dealer to round up the tools you've always wanted. JET is offering rewards of up to $100 for the purchase of these notorious tools.

REBATES up to $100

October 1, 1998 through February 28, 1999

JET
EQUIPMENT & TOOLS

JWTS-10
Contractor's Style Tablesaw
$549 MSRP
−$50 mfr. rebate
$499
after mfr. rebate

JWP-15HO
Planer
$100 REBATE

JSL-12BS
SHOPLINE™
Bandsaw
$20 REBATE

JWBS-14 Bandsaw
Open or Closed Stand
$25 REBATE

JJ-6CSX
Closed Stand Jointer
$20 REBATE

JPM-13
Planer/Molder
$50 REBATE

DC-650 Dust Collector
$15 REBATE

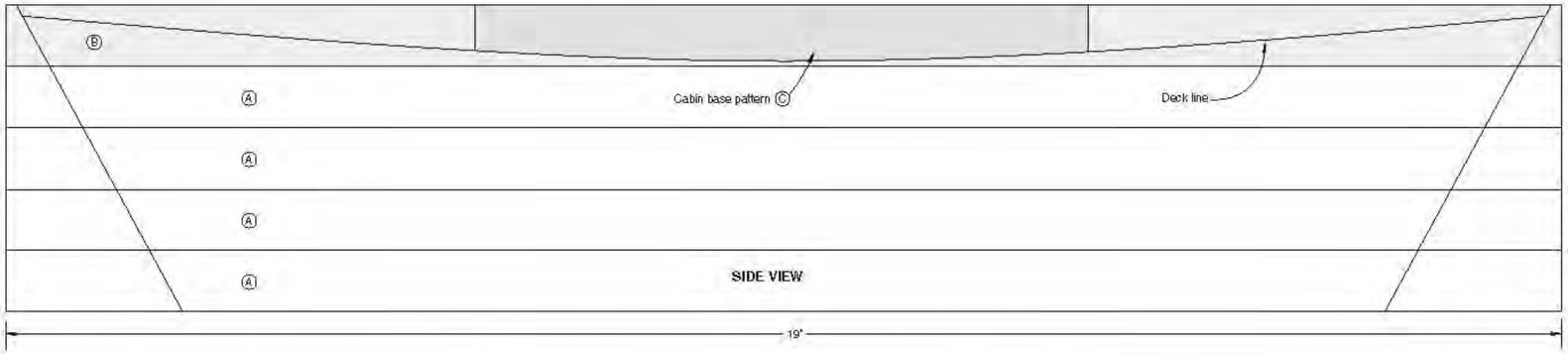
DC-1200 Dust Collector
$20 REBATE

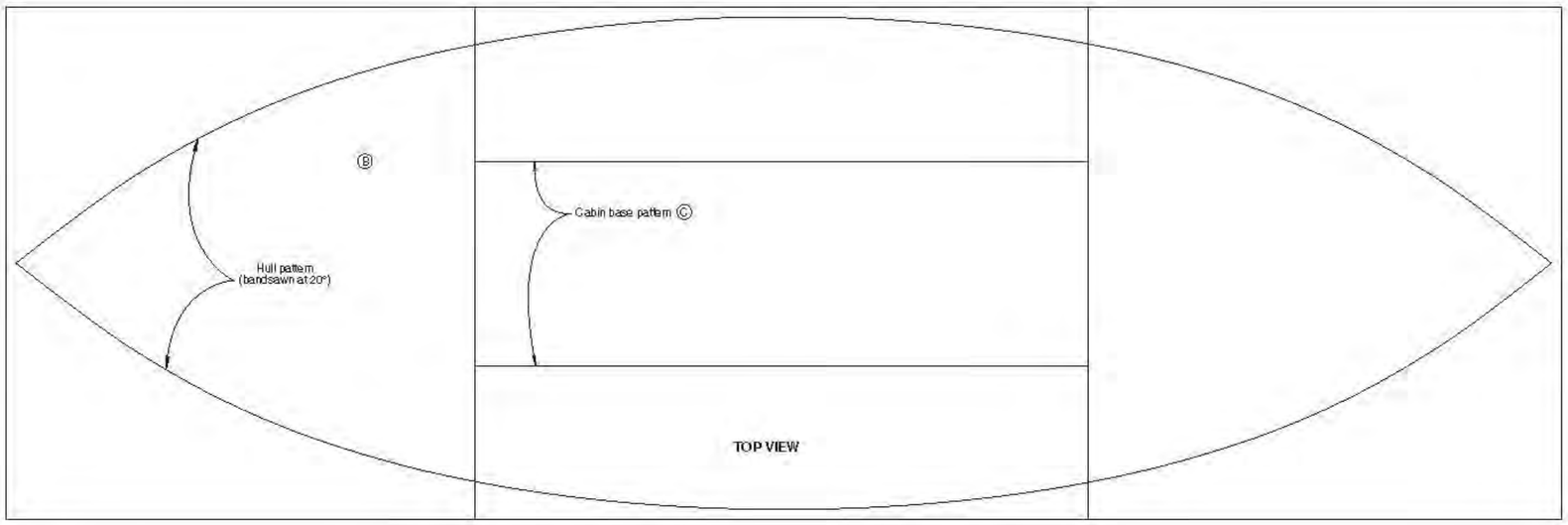
JTAS-10
Left or Right
XACTA SAW™
$100 REBATE

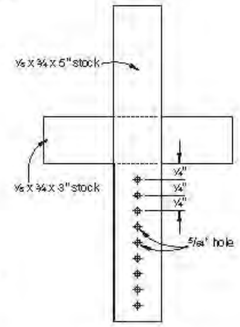
JSL-10TS
SHOPLINE™
Tablesaw
$20 REBATE

JDP-17MF
Drill Press
$20 REBATE

For the name of your local JET dealer, call (800) 274-6848 or go to www.jettools.com.
Amounts shown are manufacturer's rebates. Rebates also apply to 40th Anniversary Limited Edition tools.







DECKING GUIDE

NOAH'S ARK FULL-SIZE PATTERNS
Page 68

Better Homes and Gardens®

WOOD PATTERNS

For your woodworking convenience

NOVEMBER 1998 ISSUE 109

Dear Reader: As a service to you, we've included full-size patterns on this insert for irregular-shaped and intricate project parts. You can machine all other project parts using the Bill of Materials and the drawings accompanying the project you're building.

Page 86

Tabletop Penguins
Router Table Cabinet
Birdfeeder
Carousel Horse
Nativity Music Box
Noah's Ark

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Page 54

Page 76

Page 16

Page 68

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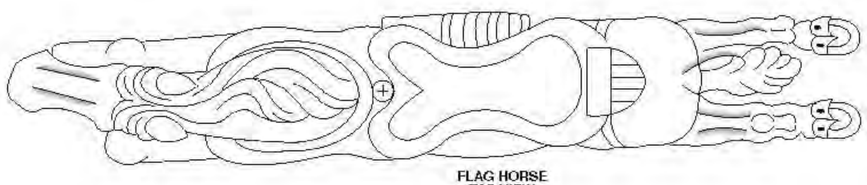
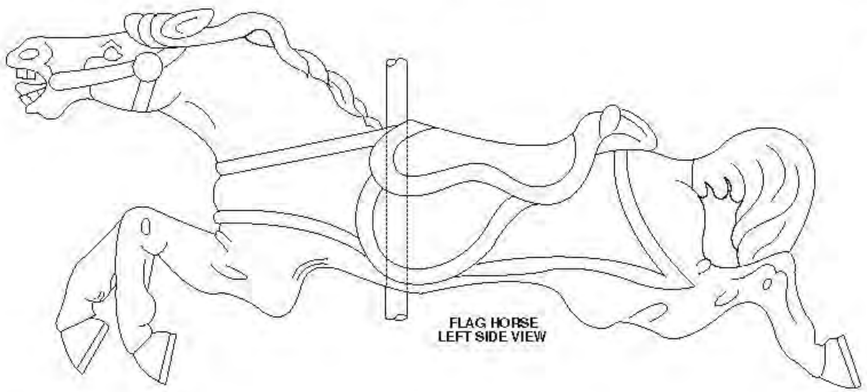


FLAG HORSE
TOP VIEW

BOTTOM OF HOOF



FLAG HORSE
LEFT SIDE VIEW

CAROUSEL HORSE FULL-SIZE PATTERNS
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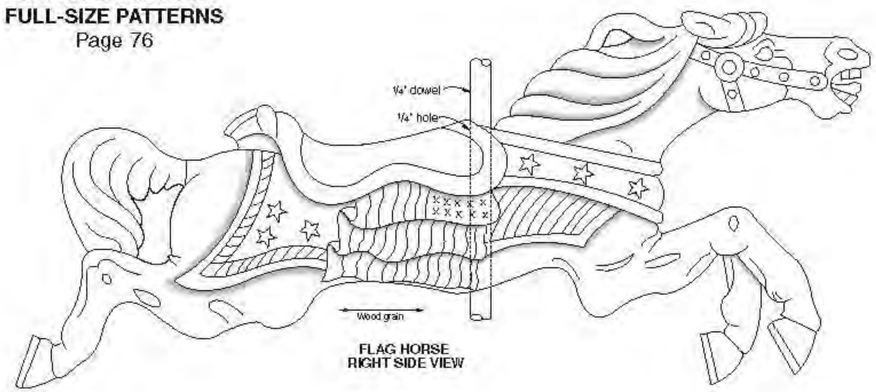

FLAG HORSE
RIGHT SIDE VIEW

TABLETOP PENGUINS FULL-SIZE PATTERNS
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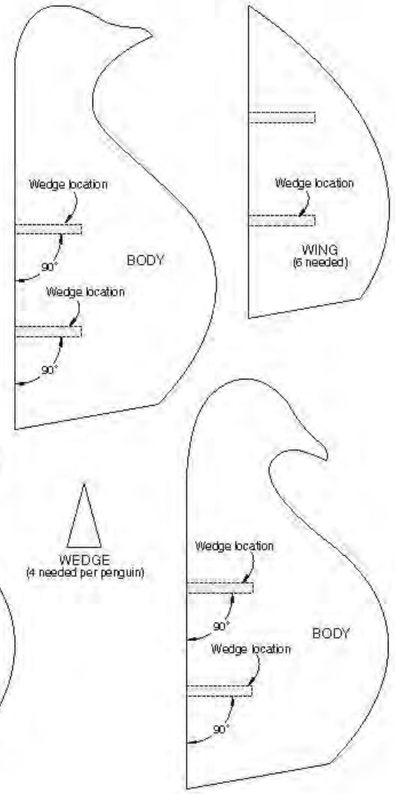
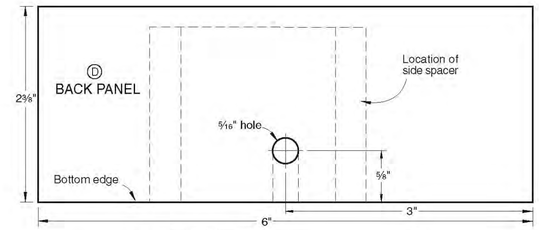
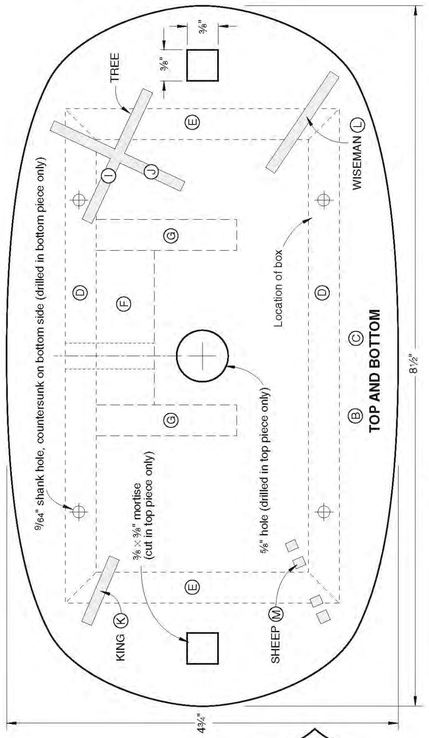
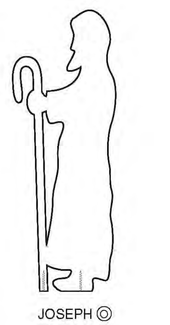
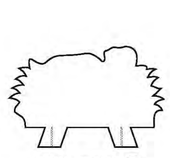
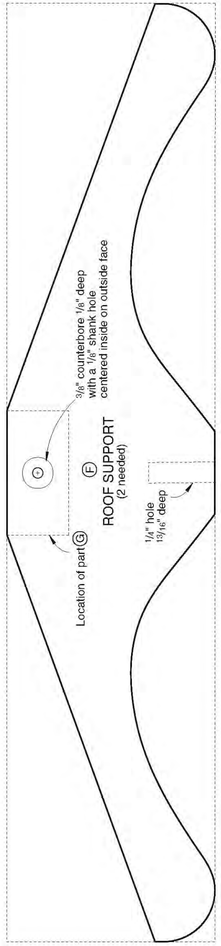


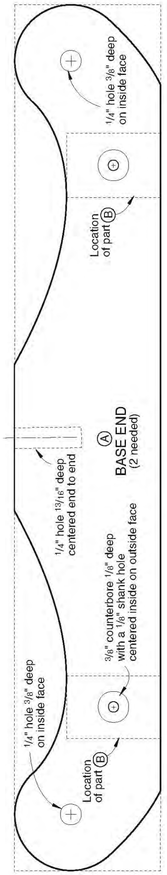




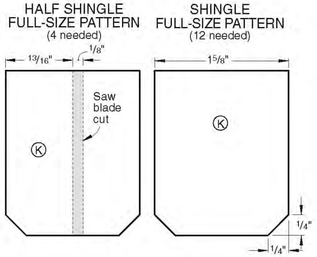


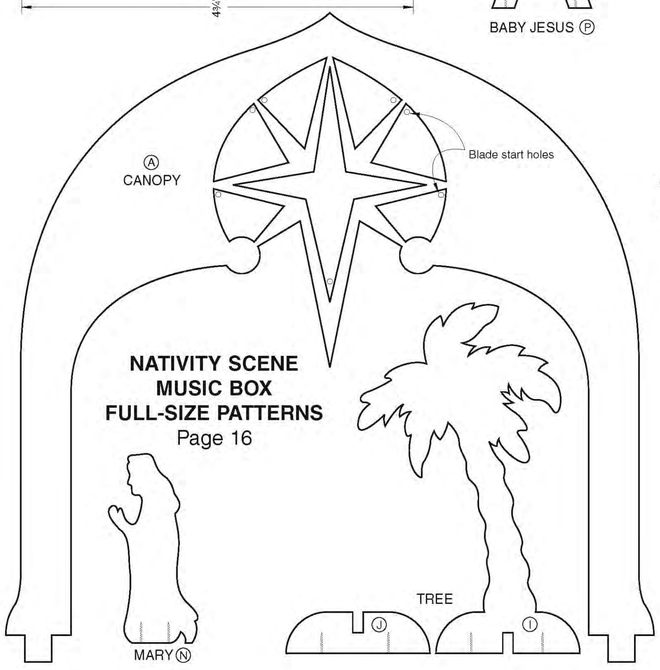



3/8" counterbore 1/8" deep with a 1/8" shank hole centered inside on outside face
ROOF SUPPORT (2 needed)
Ⓕ
Location of part Ⓖ
1/4" hole 13/16" deep

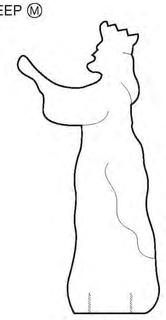

1/4" hole 3/8" deep on inside face
Location of part Ⓑ
BASE END (2 needed)
Ⓐ
1/4" hole 13/16" deep centered end to end
3/8" counterbore 1/8" deep with a 1/8" shank hole centered inside on outside face
1/4" hole 3/8" deep on inside face
Location of part Ⓑ

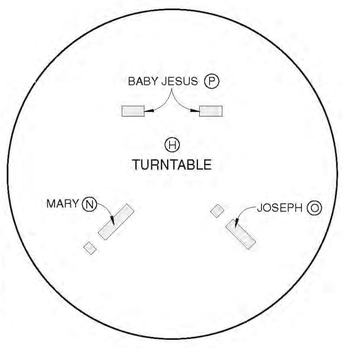
BIRDFEEDER FULL-SIZE PATTERNS
Page 54

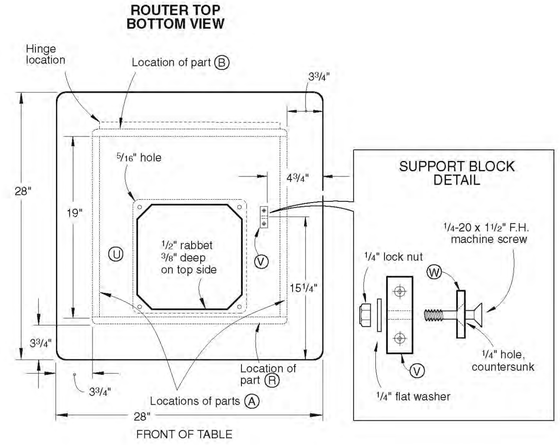




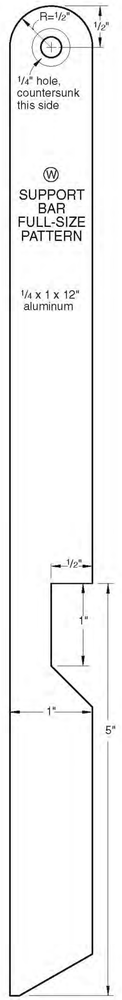
NATIVITY SCENE MUSIC BOX FULL-SIZE PATTERNS
Page 16

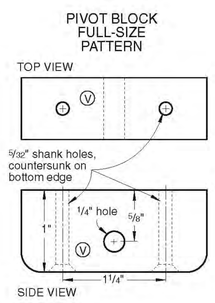


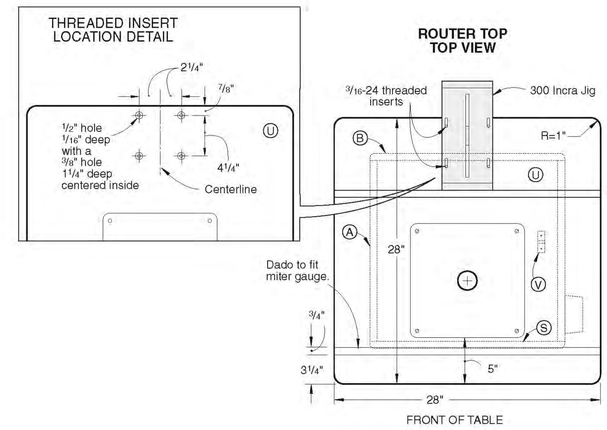




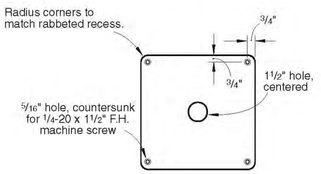
ROUTER TABLE CABINET
Page 80





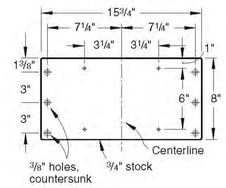


INSERT PLATE



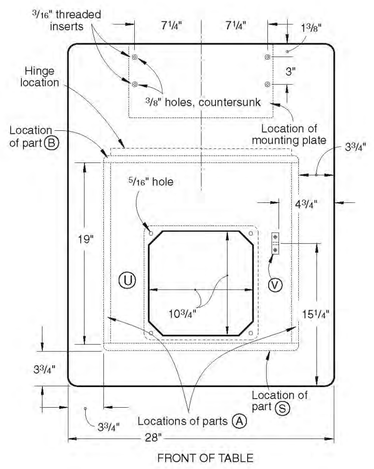
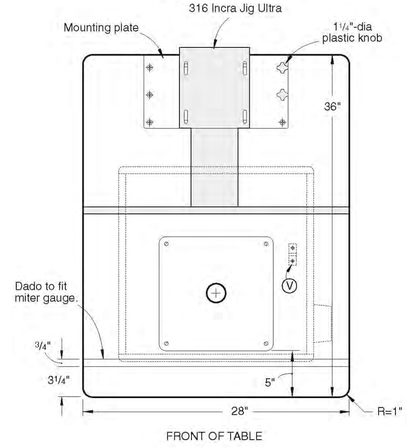
PARTS VIEW

316 INCRA JIG ULTRA MOUNTING PLATE



OPTIONAL LARGE ROUTER TOP (For use with the 316 Incra Jig Ultra)

BOTTOM VIEW



OPTIONAL LARGE ROUTER TOP TOP VIEW